

Waste Tank Summary Report for Month Ending September 30, 2000

RECEIVED
NOV 20 2000
EDMC

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.

Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

Approved for Public Release; Further Dissemination Unlimited

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This report has been reproduced from the best available copy.
Available in paper copy and microfiche.

Available electronically at
<http://www.doe.gov/bridge>. Available for a
processing fee to the U.S. Department of Energy and its
contractors, in paper, from:
U.S. Department of Energy
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831-0062
phone: 865-576-8401
fax: 865-576-5728
email: reports@adonis.osti.gov(423) 576-8401

Available for sale to the public, in paper, from:
U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Phone: 800-553-6847
fax: 703-605-6900
email: orders@ntis.fedworld.gov
online ordering:
<http://www.ntis.gov/ordering.htm>

Printed in the United States of America

Waste Tank Summary Report for Month Ending September 30, 2000

B. M. Hanlon
CH2M HILL Hanford Group, Inc.

Date Published
November 2000

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.

P. O. Box 1500
Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

Approved for Public Release; Further Dissemination Unlimited

THIS PAGE INTENTIONALLY
LEFT BLANK


APPROVALS

Prepared by:


B. M. Hanlon

10/19/00
Date

Responsible
Manager:


John S. Garfield, Manager
Inventory and Flowsheet Engineering

10-19-00
Date

This page intentionally left blank.

WASTE TANK SUMMARY REPORT

B. M. Hanlon

ABSTRACT

This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 63 smaller miscellaneous underground storage tanks and special surveillance facilities, and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U. S. Department of Energy-Richland Operations Office Order 435.1 (DOE-RL, July 1999, Radioactive Waste Management, U. S. Department of Energy-Richland Operations Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm tanks.

This page intentionally left blank.

TABLE OF CONTENTS

	Page
SUMMARY	1
I. WASTE TANK STATUS	1
II. WASTE TANK INVESTIGATIONS	1
III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS	2
Appendixes:	
A. MONTHLY SUMMARY	A-1
Tables:	
1 Monthly Summary	A-2
2 Tank Use Summary	A-3
3 Pumping Record, and Liquid Status and Pumpable Liquid Remaining in Tanks	A-4
4 Inventory Summary by Tank Farm	A-5
5 Inventory and Status by Tank - Double-Shell Tanks	A-6
6 Inventory and Status by Tank - Single-Shell Tanks	A-8
B. PERFORMANCE SUMMARY	B-1
Table:	
1 Summary of Waste Transactions in the Double-Shell Tanks :	B-2
2 Comparison of Projected Versus Actual Waste Volumes for Hanford Facilities	B-3
C. DOUBLE-SHELL TANK WASTE TYPE AND SPACE ALLOCATION	C-1
Tables:	
1 Double-Shell Tank Waste Inventory	C-2
2 Double-Shell Tank Available Space	C-3
Figures:	
1 Total Double-Shell Tank Inventory	C-5
D. WASTE TANK SURVEILLANCE MONITORING TABLES	D-1
Tables:	
1 Temperature Monitoring in Watch List Tanks	D-2
2 Temperature Monitoring in Non-Watch List Tanks	D-4
3 Additions/Deletions to Watch List Tanks by Year	D-5
4 Single-Shell Tank Monitoring Compliance Status	D-6
5 Double-Shell Tanks Monitoring Compliance Status	D-12
6 ENRAF Surface Level Gauge Installation and Data Input Methods	D-14
7 Tank Monitor and Control System (TMACS)	D-15
E. MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES	E-1
Tables:	
1 Misc. Underground Storage Tanks and Special Surveillance Facilities (Active) ..	E-2
2 East Area Underground Storage Tanks and Special Surveillance Facilities (Inactive)	E-3
3 West Area Underground Storage Tanks and Special Surveillance Facilities (Inactive)	E-4

F. LEAK VOLUME ESTIMATES F-1**Table:**

1 Single-Shell Tank Leak Volume Estimates	F-2
---	-----

G. SINGLE-SHELL TANKS INTERIM STABILIZATION, AND CONTROLLED, CLEAN, AND STABLE (CCS) STATUS G-1**Tables:**

1 Single-Shell Tanks Interim Stabilization Status	G-2
2 Single-Shell Tank Interim Stabilization Milestones	G-4
3 Single-Shell Tanks Stabilization Status Summary	G-6

H. TANK AND EQUIPMENT CODE AND STATUS DEFINITIONS H-1

1 Tank and Equipment Code/Status Definitions	H-2
--	-----

I. TANK FARM CONFIGURATION, STATUS AND FACILITY CHARTS I-1**Figures:**

1 High-Level Waste Tank Configuration	I-2
2 Double-Shell Tank Instrumentation Configuration	I-3
3 Single-Shell Tank Instrumentation Configuration	I-4
4 Tank Farm Facilities Chart - East Area	I-5/6
5 Tank Farm Facilities Chart - West Area	I-7/8

METRIC CONVERSION CHART		
1 inch	=	2.54 centimeters
1 foot	=	30.48 centimeters
1 gallon	=	3.80 liters
1 ton	=	0.90 metric tons
$^{\circ}\text{F} = \left(\frac{9}{5} ^{\circ}\text{C} \right) + 32$		
1 Btu/h = 2.930711 E-01 watts (International Table)		

WASTE TANK SUMMARY REPORT FOR MONTH ENDING SEPTEMBER 30, 2000

Note: Changes from the previous month are in bold print.

I. WASTE TANK STATUS

Category	Quantity	Date of Last Change
Double-Shell Tanks ^b	28 double-shell	10/86
Single-Shell Tanks	149 single-shell	1966
Assumed Leaker Tanks	67 single-shell	07/93
Sound Tanks	28 double-shell 82 single-shell	1986 07/93
Interim Stabilized Tanks ^a	125 single-shell	09/00
Not Interim Stabilized ^a	24 single-shell	09/00
Intrusion Prevention Completed	108 single-shell	09/96
Controlled, Clean, and Stable ^f	36 single-shell	09/96
Watch List Tanks ^d	19 single-shell 6 double-shell	09/00 ^e 06/93
Total	25 tanks	

^a Of the 125 tanks classified as Interim Stabilized, 65 are listed as Assumed Leakers. (See Table G-1)

^b Six double-shell tanks are currently included on the Hydrogen Watch List and are thus prohibited from receiving waste in accordance with "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510.

^c Two of these tanks are Assumed Leakers (BY-105, BY-106). (See Table F-1)

^d See Appendix D for more information on Watch List Tanks.

^e Dates for the Watch List tanks are "officially added to or removed from the Watch List" dates. Eighteen tanks were removed from the Organic Watch List in December 1998; the last two tanks (C-102 and C-103) were removed from the Organic Watch List in August 2000. In December 1999, tank C-106 was removed from the High Heat Load Watch List. Only the Hydrogen Watch List remains.

^f The TY tank farm was officially declared Controlled, Clean, and Stable (CCS) in March 1996. The TX tank farm and BX tank farms were declared CCS in September 1996.

II. WASTE TANK INVESTIGATIONS

This section includes all single- or double-shell tanks or catch tanks which are showing surface level or interstitial liquid level (ILL) decreases, or drywell radiation level increases in excess of established criteria.

A. Assumed Leakers or Assumed Re-leakers: (See Appendix H for definition of "Re-leaker")

This section includes all single- or double-shell tanks or catch tanks for which an off-normal or unusual occurrence report has been issued, or for which a waste tank investigation is in progress, for assumed leaks or re-leaks.

Tanks/catch tanks will remain on this list until either a) completion of Interim Stabilization, b) the updated occurrence report indicates that the tank/catch tank is not an assumed leaker, or c) the investigation is completed.

There are no formal leak investigations in progress. There are no tanks for which an off-normal or unusual occurrence report has been issued for assumed leaks or re-leaks.

B. Tanks with increases indicating possible intrusions:

This section includes all single-shell tanks and related receiver tanks for which the surveillance data show that the surface level or ILL has met or exceeded the increase criteria, or are still being investigated.

Candidate Intrusion List: Increase criteria in the following tanks indicate possible intrusions.

Tank 241-B-202
 Tank 241-BX-101
 Tank 241-BX-103
 Tank 241-BY-103

The surveillance data was last reviewed on the tanks listed as having probable liquid intrusions: Memo 74B20-99-045, dated November 22, 1999.

Catch Tank 241-AX-152: The liquid level in this catch tank was steady around 66.75 inches from the startup of Project W-030, "Tank Farm Ventilation System," in March 1998 until late August 1998. The level then began to decrease. The October 1998 reading of 65 inches is 1.75 inches below the summer average. This is an active catch tank, routinely pumped, and deviations from baseline are not applicable per OSD-00031. The decrease represents a significant change in trend and it is apparent that tank conditions changed around the end of August 1998.

Resolution Status: Discrepancy Report #98-853 was issued on November 4, 1998. One possible cause under investigation is a change in flow path, causing an increase in evaporation. The tank was pumped down to 2.25 inches on November 13, 1998. Since that time the level has decreased to 0.00 inches. The Discrepancy Report will remain open until an engineering investigation is complete.

The discrepancy remained unresolved, and there was a renewed interest in this tank because of its importance for deactivation of the 702A ventilation system to prepare it for Decommissioning and Deactivation and for collection of drainage from AX-155. In the absence of an agreement on a leak test, management requested a leak assessment. The leak assessment team met April 20, 2000, to review the data. Observations inconsistent with a conclusion that the catch tank was leaking and scanty data prompted the leak assessment team to defer a decision pending availability of additional data - primarily tank temperature and a more sensitive level measuring device to shorten the necessary leak test time. A Leak Test Recommendation was issued May 8, 2000. The leak test involves adding water to the tank and measuring the level drop, to support tank integrity assessment. The addition of AX-152 integrity pressure test water to AY-101 is being re-evaluated because the actual volume of water to be added to the DST system (approximately 20,000 gallons) is double the volume originally evaluated. The increased volume is necessary because of the siphon type pump in the catch tank.

Leak assessment is currently being performed per Work Package 2E-00-193. Water was added in August 2000 which raised the level to 10-3/4 inches. The level has remained steady since that time.

Work Package 2E-00-194 is on the schedule to fill the catch tank to 80% capacity (approximately 108 inches) and perform a 40-hour leak test.

Because the ENRAF will not be installed, Work Package ES-99-00133 has been revised to allow flammable gas sampling through the existing manual tape; sampling is expected to take place in November 2000.

III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

1. Single-Shell Tanks Interim Stabilization

Tank 241-U-103 - This tank was declared Interim Stabilized on September 11, 2000. Total pumped: 98.9 Kgallons; total waste: 417.5 Kgallons, supernate: 500 gallons, DIL: 33.0 Kgallons, PLR: 27.8 Kgallons, sludge: 12.5 Kgallons, saltcake: 404.5 Kgallons.

2. Single-Shell Tanks Saltwell Jet Pumping (See Table A-6 footnotes for further information)

Tank 241-A-101 - Pumping began May 6, 2000. No pumping in September 2000; a total of 14.1 Kgallons has been pumped from this tank since start of pumping in May 2000.

Tank 241-AX-101 - Pumping began July 29, 2000. No pumping in September 2000; a total of 8.3 Kgallons has been pumped from this tank since start of pumping in July 2000.

Tank 241-S-102 - Pumping problems forced many shutdowns. The pump was replaced and pumping resumed on February 19, 2000. Problems with the new pump forced a shutdown on March 23, 2000. Pumping was interrupted in early June 2000; due to the flushing involved in trying to return to pumping. June pumping resulted in a net addition to the tank. No pumping in September 2000; a total of 56.8 Kgallons has been pumped from this tank since start of pumping in March 1999.

Tank 241-S-106 - Pumping was discontinued on January 3, 2000, to allow the waste levels to stabilize, so waste porosities and final waste volumes can then be calculated to determine whether this tank meets Interim Stabilization criteria. As of September 30, 2000, waste levels had not yet stabilized.

Tank 241-S-109 - Pumping began September 23, 2000, approximately two years ahead of schedule. In September 2000, a total of 3.0 Kgallons was pumped; a total of 114.0 Kgallons has been pumped from this tank (111.0 Kgallons was pumped in 1979 [primary stabilization], and partial isolation in 1982).

Tank 241-SX-105 - Pumping began August 8, 2000. In September 2000, a total 35.1 Kgallons was pumped; a total of 78.8 Kgallons has been pumped since start of pumping in August 2000.

Tank 241-U-102 - Pumping began January 20, 2000. In September 2000, a total of 3.4 Kgallons was pumped; a total of 56.7 Kgallons has been pumped from this tank since start of pumping in January 2000.

Tank 241-U-105 - Pumping began December 10, 1999. No pumping in September 2000; a total of 87.5 Kgallons has been pumped from this tank since start of pumping in December 1999.

Tank 241-U-106 - Pumping began August 24, 2000. In September 2000, a total of 7.6 Kgallons was pumped; a total of 32.6 Kgallons has been pumped from this tank since start of pumping in August 2000.

Tank 241-U-109 - Pumping began March 11, 2000. In September 2000, a total of 4.6 Kgallons was pumped; a total of 58.5 Kgallons has been pumped from this tank since start of pumping in March 2000.

3. Double-Shell Tank 241-SY-101 Waste Level Increase

Tank 241-SY-101 exhibited gas release events due to generation and retention of flammable gas. A mixer pump was installed in the tank in July 1993, which circulated liquid wastes. This prevents gas bubbles from building up at the bottom, and results in venting of small steady gas releases. Since early 1997, the surface level has been rising in spite of regular mixer pump operations.

Resolution Status: On February 11, 1998, the PRC recommended that the DOE-RL declare an Unreviewed Safety Question (USQ) over the continued level growth observed in this tank. The contractor has established a multi-disciplinary team to solve the level growth issues in SY-101.

Final calculated transfer and dilution volumes for level growth remediation can be found in Memo 74B50-00-030, dated March 23, 2000.

The controlled Mixer Pump Observation Period (MPOP) has been completed and the data has been evaluated. Tank SY-101 waste continues to perform as expected. This performance supported the completion of the observation period on July 17, 2000. The waste characteristics have demonstrated that it no longer is retaining significant amounts of releasable gas. The mixer pump has been placed into a fully operable "Standby Mode."

4. RL-PMHC-TANKFARM-1999-0023. Occurrence Report, "Additional Information Regarding Crust Growth in 241-SY-101," Off-Normal Occurrence, Latest Update: April 27, 2000.

On December 18, 1999, approximately 90,000 gallons of nuclear waste was transferred from tank SY-101 to SY-102 in the first of three planned transfers.

In conjunction with the transfers, water is added to the waste to reduce the concentration of gas generation and gas-retaining chemicals to reduce gas buildup in SY-101 and associated receiving tanks.

The second of the three waste transfers was completed on January 27, 2000.

The third and final phase of transfers was initiated on February 29, and completed March 2, 2000.

On April 3, 2000, a Mixer Pump Observation Period (MPOP) began, which was completed; data is being evaluated.

The mixer pump has been placed in fully operable "standby mode."

This report is being extended pending completion and evaluation of tank activities during the MPOP and resolution of the USQ issues.

It is anticipated that an Update or Final report will be submitted no later than October 1, 2000.

5. RP-CHG-TANKFARM-2000-0026. Occurrence Report, "AW-102/104 Annulus Continuous Air Monitor Radiation Hi Failure Alarm (USQ)." Unusual Occurrence, Latest Update: August 9, 2000

On March 22, 2000, a loss of power resulted in a Radiation Hi Failure alarm on the AW-102/104 Continuous Air Monitor (CAM) and the unplanned entry into LCO 3.2.6.

The LCO requires either the annulus conductivity probe system or the annulus CAMs to be operable. Loss of power to the CAMs during maintenance on the separate conductivity probe system resulted in the unplanned entry.

The LCO was exited upon completion of the annulus conductivity probe functional test.

The cross-site transfer in progress was shut down. It was attempted to restore power to the CAM. The power breaker was found tripped. Troubleshooting the loss of power commenced.

Troubleshooting the loss of power to the CAMs continues.

This Update report is being submitted in order to allow additional time for PAAA screening, Risk Rank Value, Root Cause Analysis and Corrective Action Plan.

Troubleshooting revealed burned wiring at a junction box in a Confined Space.

The CAM system repair will require extensive planning to formalize the final repair package.

Corrective Action: To reroute the power from a difference source, using new wiring, according to Work Package #2E-00-859/2 - Target completion date: October 9, 2000.

6. RP-CHG-TANKFARM-2000-0034, Occurrence Report, "241-SY Exhauster Shutdown (USQ)." Unusual Occurrence. Latest update: September 22, 2000

During performance of the monthly CAM source check of the SY-Tank Farm primary exhauster, the CAM exhibited an unexplained high radiation count alarm while in the test mode, which caused the SY primary exhauster to shutdown on interlock.

This exhauster is required to be operational to prevent the possible accumulation of flammable gas in the SY double-shell tanks. Start-up of the P-28 back-up exhauster was unsuccessful due to a suspected pressure switch problem.

All unnecessary personnel were evacuated from the SY-Tank Farm. Entered action statements per Limiting Condition for Operation (LC) 3.2.1. All saltwell pumps discharging to tank SY-102 were secured and placed in short-term shutdown. No indicate of radiation release was detected.

An investigation was initiated to determine the cause of the unexpected high-count alarm. Troubleshooting began on the suspected P-28 pressure switch problem.

This update report is being submitted in order to allow additional time to perform PAAA screening, Root Cause Analysis and the Corrective Action Plan.

An Update or Final Report will be submitted on or before October 25, 2000.

APPENDIX A
MONTHLY SUMMARY

TABLE A-1. MONTHLY SUMMARY

TANK STATUS

September 30, 2000

	200 EAST AREA	200 WEST AREA	TOTAL
IN SERVICE	25	03	28 (1)
OUT OF SERVICE	66	83	149
SOUND	59	51	110
ASSUMED LEAKER	32	35	67
INTERIM STABILIZED	60	65	125
ISOLATED			
PARTIAL INTERIM	11	30	41
INTRUSION PREVENTION COMPLETE	55	53	108
CONTROLLED, CLEAN, AND STABLE	12	24	36

		WASTE VOLUMES (Kgallons)					
		200	200		SST	DST	
		EAST AREA	WEST AREA	TOTAL	TANKS	TANKS	TOTAL
SUPERNATANT							
AW	Aging waste	1765	0	1765	0	1765	1765
CC	Complexant concentrate waste	3138	764	3902	0	3902	3902
CP	Concentrated phosphate waste	1090	0	1090	0	1090	1090
DC	Dilute complexed waste	46	0	46	1	45	46
DN	Dilute non-complexed waste	2620	713	3333	0	3333	3333
PD	PUREX/TRUsolids	319	0	319	0	319	319
NCPLX	Non-complexed waste	192	212	404	404	0	404
DSSF	Double-shell slurry feed	6148	168	6316	1049	5267	6316
TOTAL SUPERNATANT		15318	1857	17175	1454	15721	17175
SOLIDS							
	Sludge (includes liquids)	6511	5969	12480	11394	1086	12480
	Saltcake (includes liquids)	8044	16108	24152	20504	3648	24152
TOTAL SOLIDS		14555	22077	36632	31898	4734	36632
TOTAL WASTE		29873	23934	53807	33352	20455	53807
AVAILABLE SPACE IN TANKS		9914	921	10835	0	10835	10835
DRAINABLE INTERSTITIAL LIQUID (2)		1415	2364	3779	3779	(2)	3779
DRAINABLE LIQUID REMAINING (2)		2490	2743	5233	5233	(2)	5233

(1) Includes six double-shell tanks on Hydrogen Watch List not currently allowed to receive waste, AN-103, AN-104, AN-105, AW-101, SY-101, and SY-103.

(2) Drainable Interstitial Liquid and Drainable Liquid Remaining for single-shell tanks only; not applicable for double-shell tanks

TABLE A-2. TANK USE SUMMARY

September 30, 2000

TANK FARMS	TANKS AVAILABLE TO RECEIVE WASTE TRANSFERS	SOUND	ASSUMED LEAKER	ISOLATED TANKS			
				PARTIAL INTERIM ISOLATED	INTRUSION PREVENTION COMPLETED	CONTROLLED CLEAN, AND STABLE	INTERIM STABILIZED TANKS
EAST							
A	0	3	3	2	4	0	5
AN	7 (1)	7	0	0	0	0	0
AP	8	8	0	0	0	0	0
AW	6 (1)	6	0	0	0	0	0
AX	0	2	2	1	3	0	3
AY	2	2	0	0	0	0	0
AZ	2	2	0	0	0	0	0
B	0	6	10	0	16	0	16
BX	0	7	5	0	12	12	12
BY	0	7	5	5	7	0	10
C	0	9	7	3	13	0	14
Total	25	59	32	11	55	12	60
WEST							
S	0	11	1	10	2	0	5
SX	0	5	10	6	9	0	11
SY	3 (1)	3	0	0	0	0	0
T	0	9	7	5	11	0	16
TX	0	10	8	0	18	18	18
TY	0	1	5	0	6	6	6
U	0	12	4	9	7	0	9
Total	3	51	35	30	53	24	65
TOTAL	28	110	67	41	108	36	125

(1) Six Double-Shell Tanks on the Hydrogen Watch List are not currently receiving waste transfers (AN-103, 104, 105, AW-101, SY-101 and 103).

**TABLE A-3. PUMPING RECORD, LIQUID STATUS AND PUMPABLE
LIQUID REMAINING IN TANK FARMS**

September 30, 2000

TANK FARMS	Waste Volumes (Kgallons)						
	<u>PUMPED THIS MONTH</u>	<u>PUMPED FY TO DATE</u>	<u>CUMULATIVE TOTAL PUMPED 1979 TO DATE</u>	<u>SUPERNATANT LIQUID</u>	<u>DRAINABLE INTERSTITIAL REMAINING</u>	<u>DRAINABLE LIQUID REMAINING</u>	<u>PUMPABLE SST LIQUID REMAINING</u>
EAST							
A	0.0	14.1	164.6	503	161	665	622
AN	N/A	N/A	N/A	3753	N/A	N/A	N/A
AP	N/A	N/A	N/A	5747	N/A	N/A	N/A
AW	N/A	N/A	N/A	2558	N/A	N/A	N/A
AX	0.0	8.3	21.3	378	105	483	447
AY	N/A	N/A	N/A	421	N/A	N/A	N/A
AZ	N/A	N/A	N/A	1765	N/A	N/A	N/A
B	0.0	0.0	0.0	15	262	277	203
BX	N/A	0.0	200.2	24	127	N/A	N/A
BY	0.0	0.0	1567.8	0	581	581	498
C	0.0	0.0	103.0	154	179	333	268
Total	0.0	22.4	2066.9	15318	1415	2339	2038
WEST							
S	3.0	36.2	1043.9	139	648	787	687
SX	35.1	93.3	457.6	134	633	767	682
SY	N/A	N/A	N/A	1477	N/A	N/A	N/A
T	0.0	0.0	245.7	29	218	246	168
TX	N/A	0.0	1205.7	9	285	N/A	N/A
TY	N/A	0.0	29.9	0	53	N/A	N/A
U	15.6	322.4	334.2	69	527	596	514
Total	53.7	451.9	3317.0	1857	2364	2396	2051
TOTAL	53.7	474.3	5373.9	17175	3779	4735	4089

N/A = Not applicable for Double-Shell Tank Farms, and Single-Shell Tank Farms which have been declared Controlled, Clean and Stable (BX, TX, TY).

TABLE A-4. INVENTORY SUMMARY BY TANK FARM

September 30, 2000

SUPERNATANT LIQUID VOLUMES (Kg/llo)												SOLIDS VOLUME		
TANK FARM	TOTAL WASTE	AVAIL SPACE	AW	CC	CP	DC	DN PD	NCPLX	DSSE	TOTAL	SLUDGE	SALT CAKE	TOTAL	
EAST														
A	1493	0	0	0	0	0	0	0	0	503	503	588	402	990
AN	5501	2479	0	1745	0	0	225	0	0	1783	3753	0	1748	1748
AP	5836	3284	0	1393	1090	0	1103	0	0	2161	5747	0	89	89
AW	3989	2851	0	0	0	0	918	319	0	1323	2558	571	860	1431
AX	826	0	0	0	0	0	0	0	0	378	378	26	422	448
AY	731	1229	0	0	0	45	376	0	0	0	421	310	0	310
AZ	1899	71	1765	0	0	0	0	0	0	0	1765	134	0	134
B	1909	0	0	0	0	0	0	0	15	0	15	1211	683	1894
BX	1490	0	0	0	0	0	0	0	24	0	24	1259	207	1466
BY	4387	0	0	0	0	0	0	0	0	0	0	754	3633	4387
C	1812	0	0	0	0	1	0	0	153	0	154	1658	0	1658
Total	29873	9314	1765	3138	1090	46	2620	319	192	8148	15318	6511	8044	14555
WEST														
S	5082	0	0	0	0	0	0	0	138	1	139	1185	3607	4792
SX	3954	0	0	0	0	0	0	0	0	134	134	1064	2756	3820
SY	2499	921	0	764	0	0	713	0	0	0	1477	71	951	1022
T	1877	0	0	0	0	0	0	0	29	0	29	1703	145	1848
TX	6764	0	0	0	0	0	0	0	9	0	9	880	5875	6755
TY	639	0	0	0	0	0	0	0	0	0	0	529	110	639
U	3270	0	0	0	0	0	0	0	36	33	69	537	2664	3201
Total	24085	921	0	764	0	0	713	0	212	168	1857	5969	16108	32077
TOTAL	53958	10235	1765	3902	1090	46	3333	319	404	8316	17175	12480	24152	36632

HNF-EP-0182-150

A-5

TABLE A-5. INVENTORY AND STATUS BY TANK - DOUBLE SHELL-TANKS

September 30, 2000

TANK STATUS								SOLIDS VOLUME				VOLUME DETERMINATION			PHOTOS/VIDEOS		
	WAST	TANK	TANK	EQUIVA-	AVAIL.		SUPER-	SLUDGE	LIQUID	SALTCAKE		LIQUID	SOLIDS	SOLIDS			SEE
	MATL	STATUS	USE	LENT	TOTAL	SPACE	NATANT	(includes	(15%	(includes		(25%					FOOTNOTE
TANK				WASTE	WASTE	(1)	LIQUID	liquid)	porosity)	liquid)	porosity)	VOLUME	SOLIDS	SOLIDS	LAST	LAST	FOR
				INCHES	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	(Kgal)	METHOD	METHOD	UPDATE	IN-TANK	IN-TANK	THESE
															PHOTO	VIDEO	CHANGES
AN TANK FARM STATUS																	
AN-101	DN	SOUND	DRCVR	81.8	225	915	225	0	0	0	0	FM	S	06/30/99			
AN-102	CC	SOUND	CWHT	383.6	1055	85	966	0	0	89	22	FM	S	06/30/99			
AN-103	DSS	SOUND	CWHT	348.7	959	181	502	0	0	457	114	FM	S	06/30/99	10/29/87		
AN-104	DSSF	SOUND	CWHT	382.9	1053	87	604	0	0	449	112	FM	S	06/30/99	08/19/88		
AN-105	DSSF	SOUND	CWHT	410.2	1128	12	639	0	0	489	122	FM	S	06/30/99	01/26/88		
AN-106	CC	SOUND	CWHT	14.2	39	1101	22	0	0	17	4	FM	S	06/30/99			
AN-107	CC	SOUND	CWHT	378.9	1042	98	795	0	0	247	62	FM	S	06/30/99	09/01/88		
7 DOUBLE-SHELL TANKS				TOTALS	5501	2479	3753	0	0	1748	436						
AP TANK FARM STATUS																	
AP-101	DSSF	SOUND	DRCVR	405.1	1114	26	1114	0	0	0	0	FM	S	05/01/89			
AP-102	CP	SOUND	GRTFD	396.4	1090	50	1090	0	0	0	0	FM	S	07/11/89			
AP-103	CC	SOUND	DRCVR	102.9	283	857	283	0	0	0	0	FM	S	05/31/96			
AP-104	CC	SOUND	GRTFD	403.6	1110	30	1110	0	0	0	0	FM	S	10/13/88			
AP-105	DSSF	SOUND	CWHT	413.1	1136	4	1047	0	0	89	22	FM	S	06/30/99	09/27/95		
AP-106	DN	SOUND	DRCVR	226.9	624	516	624	0	0	0	0	FM	S	10/13/88			
AP-107	DN	SOUND	DRCVR	161.8	445	695	445	0	0	0	0	FM	S	10/13/88			
AP-108	DN	SOUND	DRCVR	12.4	34	1106	34	0	0	0	0	FM	S	10/13/88			
8 DOUBLE-SHELL TANKS				TOTALS	5836	3284	5747	0	0	89	22						
AW TANK FARM STATUS																	
AW-101	DSSF	SOUND	CWHT	409.8	1127	13	820	0	0	307	77	FM	S	06/30/99	03/17/88		
AW-102	DN	SOUND	EVFD	23.6	65	1075	29	0	0	38	9	FM	S	06/30/99	02/02/83		
AW-103	PD	SOUND	DRCVR	185.5	510	630	147	316	79	47	7	FM	S	06/30/99			
AW-104	DN	SOUND	DRCVR	406.5	1118	22	887	0	0	231	58	FM	S	06/30/99	02/02/83		
AW-105	PD	SOUND	DRCVR	155.3	427	713	172	255	38	0	0	FM	S	06/30/99			
AW-106	DSSF	SOUND	SRCVR	269.8	742	398	503	0	0	239	60	FM	S	06/30/99	02/02/83		
6 DOUBLE-SHELL TANKS				TOTALS	3989	2851	2558	571	117	860	211						

A-6

HNF-EP-0182-150

TABLE A-5. INVENTORY AND STATUS BY TANK - DOUBLE SHELL-TANKS

September 30, 2000

TANK STATUS								SLUDGE				SALTCAKE		VOLUME DETERMINATION			PHOTOS/VIDEOS		SEE FOOTNOTE FOR THESE CHANGES
TANK	WASTE MATL	TANK STATUS	TANK USE	EQUIVA- LENT	TOTAL	AVAIL. SPACE	SUPER- NATANT LIQUID (Kgal)	SLUDGE (includes liquid) (Kgal)	LIQUID (15% porosity) (Kgal)	SALTCAKE (includes liquid) (Kgal)	LIQUID (25% porosity) (Kgal)	LIQUID VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO			
				WASTE INCHES	WASTE (Kgal)	(1) (Kgal)													
<u>AY TANK FARM STATUS</u>																			
AY-101	DC	SOUND	DRCVR	50.5	139	841	45	94	14	0	0	FM	S	06/30/99	12/28/82				
AY-102	DN	SOUND	DRCVR	215.3	592	388	376	216	32	0	0	FM	S	11/30/99	04/28/81				
2 DOUBLE-SHELL TANKS				TOTALS	731	1229	421	310	46	0	0								
<u>AZ TANK FARM STATUS</u>																			
AZ-101	AW	SOUND	CWHT	330.5	909	71	863	46	7	0	0	FM	S	06/30/98	08/18/83				
AZ-102	AW	SOUND	DRCVR	360.0	990	0	902	88	13	0	0	FM	S	06/30/99	10/24/84				
2 DOUBLE-SHELL TANKS				TOTALS	1899	71	1765	134	20	0	0								
<u>SY TANK FARM STATUS</u>																			
SY-101	CC	SOUND	CWHT	353.1	971	189	386	0	0	585	146	FM	S	06/30/99	04/12/89				
SY-102	DN	SOUND	DRCVR	285.1	784	356	713	71	11	0	0	FM	S	06/30/99	04/29/81				
SY-103	CC	SOUND	CWHT	270.5	744	396	378	0	0	366	55	FM	S	06/30/99	10/01/85	(a)			
3 DOUBLE-SHELL TANKS				TOTALS	2499	921	1477	71	11	951	201								
GRAND TOTAL					20455	10835	15721	1086	194	3648	870								

Note: +/- 1 Kgal differences are the result of computer rounding

Available Space Calculations Used in this Document

Tank Farms		(Most Conservative)	
AN, AP, AW, SY	1,140,000 gal (414.5	1,140	Kgal
AY, AZ (Aging Wa	980,000 gal (356.4	980	Kgal

NOTE: Supernate + Sludge (includes liquid) + Saltcake (includes liquid) = Total Waste

(1) Available Space volumes include restricted space, - see Appendix C tables for allocation of these restrictions.

(a) SY-103 - from March 2000 thru August 2000, the total saltcake was mistakenly shown as total sludge, due to re-calculations and a new format used during that time. There is no sludge in this tank.

HNF-EP-0182-150

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION			PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
A TANK FARM STATUS																		
A-101	DSSF	SOUND	/PI	877	494	95	0.0	14.1	590	574	3	380	P	F	09/30/99	08/21/85	(h)	
A-102	DSSF	SOUND	IS/PI	41	4	8	0.0	39.5	12	4	15	22	P	FP	07/27/89	07/20/89		
A-103	DSSF	ASMD LKR	IS/IP	371	5	45	0.0	111.0	50	43	366	0	-	FP	06/03/88	12/28/88		
A-104	NCPLX	ASMD LKR	IS/IP	28	0	4	0.0	0.0	4	0	28	0	M	PS	01/27/78	06/25/86		
A-105	NCPLX	ASMD LKR	IS/IP	51	0	0	0.0	0.0	0	0	51	0	P	MP	06/30/99	08/20/86		
A-106	CP	SOUND	IS/IP	125	0	9	0.0	0.0	9	1	125	0	P	M	09/07/82	08/19/86		
6 SINGLE-SHELL TANKS				TOTALS	1493	503	161	0.0	164.6	665	622	588	402					
AX TANK FARM STATUS																		
AX-101	DSSF	SOUND	/PI	676	378	74	0.0	8.3	452	436	3	295	P	F	09/30/99	06/18/87	(i)	
AX-102	CC	ASMD LKR	IS/IP	30	0	7	0.0	13.0	7	0	7	23	F	S	06/30/99	06/05/89		
AX-103	CC	SOUND	IS/IP	112	0	23	0.0	0.0	23	11	8	104	F	S	06/30/99	08/13/87		
AX-104	NCPLX	ASMD LKR	IS/IP	8	0	1	0.0	0.0	1	0	8	0	P	M	06/30/99	08/18/87		
4 SINGLE-SHELL TANKS				TOTALS:	826	378	105	0.0	21.3	483	447	26	422					
B TANK FARM STATUS																		
B-101	NCPLX	ASMD LKR	IS/IP	113	0	24	0.0	0.0	24	17	0	113	P	F	06/30/99	05/19/83	(j)	
B-102	NCPLX	SOUND	IS/IP	32	4	7	0.0	0.0	11	4	0	28	P	F	06/30/99	08/22/85		
B-103	NCPLX	ASMD LKR	IS/IP	59	0	11	0.0	0.0	11	3	0	59	F	F	06/30/99	10/13/88		
B-104	NCPLX	SOUND	IS/IP	371	1	45	0.0	0.0	46	42	309	61	M	M	06/30/99	10/13/88		
B-105	NCPLX	ASMD LKR	IS/IP	158	0	20	0.0	0.0	20	16	28	130	P	MP	06/30/99	05/19/88		
B-106	NCPLX	SOUND	IS/IP	117	1	25	0.0	0.0	26	19	0	116	F	F	02/29/00	02/28/85		
B-107	NCPLX	ASMD LKR	IS/IP	165	1	22	0.0	0.0	23	19	93	71	M	M	06/30/99	02/28/85		
B-108	NCPLX	SOUND	IS/IP	94	0	15	0.0	0.0	15	11	53	41	F	F	06/30/99	05/10/85		
B-109	NCPLX	SOUND	IS/IP	127	0	21	0.0	0.0	21	17	63	64	M	M	06/30/99	04/02/85		
B-110	NCPLX	ASMD LKR	IS/IP	246	1	27	0.0	0.0	28	20	245	0	MP	MP	02/28/85	03/17/88		
B-111	NCPLX	ASMD LKR	IS/IP	237	1	23	0.0	0.0	24	29	236	0	F	F	06/28/85	06/26/85		
B-112	NCPLX	ASMD LKR	IS/IP	33	3	4	0.0	0.0	7	3	30	0	F	F	05/31/85	05/29/85		
B-201	NCPLX	ASMD LKR	IS/IP	29	1	4	0.0	0.0	5	1	28	0	M	M	04/28/82	11/12/86		06/23/95
B-202	NCPLX	SOUND	IS/IP	27	0	4	0.0	0.0	4	0	27	0	P	M	05/31/85	05/29/85		06/15/95
B-203	NCPLX	ASMD LKR	IS/IP	51	1	5	0.0	0.0	6	1	50	0	PM	PM	05/31/84	11/13/86		
B-204	NCPLX	ASMD LKR	IS/IP	50	1	5	0.0	0.0	6	1	49	0	P	M	05/31/84	10/22/87		
16 SINGLE-SHELL TANKS				TOTALS	1909	15	262	0.0	0.0	277	203	1211	683					

A-8

HNF-EP-0182-150

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION			PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
BX TANK FARM STATUS																		
BX-101	NCPLX	ASMD LKR	IS/IP/CCS	43	1	4	0.0	0.0	5	1	42	0	P	M	04/28/82	11/24/88	11/10/94	
BX-102	NCPLX	ASMD LKR	IS/IP/CCS	96	0	0	0.0	0.0	0	0	96	0	P	M	04/28/82	09/18/85		
BX-103	NCPLX	SOUND	IS/IP/CCS	71	9	4	0.0	0.0	13	9	62	0	P	F	11/29/83	10/31/86	10/27/94	
BX-104	NCPLX	SOUND	IS/IP/CCS	83	3	4	0.0	17.4	7	3	90	0	F	F	02/29/00	09/21/89		
BX-105	NCPLX	SOUND	IS/IP/CCS	51	5	4	0.0	15.0	9	5	46	0	F	S	06/30/99	10/23/86		
BX-106	NCPLX	SOUND	IS/IP/CCS	38	0	4	0.0	14.0	4	0	38	0	MP	PS	06/01/95	05/19/88	07/17/95	
BX-107	NCPLX	SOUND	IS/IP/CCS	345	1	36	0.0	23.1	37	33	344	0	MP	P	09/18/90	09/11/90		
BX-108	NCPLX	ASMD LKR	IS/IP/CCS	26	0	4	0.0	0.0	4	0	26	0	M	PS	07/31/79	05/05/94		
BX-109	NCPLX	SOUND	IS/IP/CCS	193	0	25	0.0	8.2	25	20	193	0	FP	P	09/17/90	09/11/90		
BX-110	NCPLX	ASMD LKR	IS/IP/CCS	207	3	28	0.0	1.5	31	26	133	71	MP	M	06/30/99	07/15/94	10/13/94	
BX-111	NCPLX	ASMD LKR	IS/IP/CCS	162	1	5	0.0	116.9	6	2	25	136	M	M	06/30/99	05/19/94	02/28/95	
BX-112	NCPLX	SOUND	IS/IP/CCS	165	1	9	0.0	4.1	10	7	164	0	FP	P	09/17/90	09/11/90		
12 SINGLE-SHELL TANKS TOTALS:				1490	24	127	0.0	200.2	151	106	1259	207						
BY TANK FARM STATUS																		
BY-101	NCPLX	SOUND	IS/IP	387	0	28	0.0	35.8	28	24	109	278	P	M	05/30/84	09/19/89		
BY-102	NCPLX	SOUND	IS/PI	277	0	40	0.0	159.0	40	33	0	277	MP	M	05/01/95	09/11/87	04/11/95	
BY-103	NCPLX	ASMD LKR	IS/PI	400	0	58	0.0	95.9	58	53	9	391	MP	M	06/30/99	09/07/89	02/24/97	
BY-104	NCPLX	SOUND	IS/IP	326	0	40	0.0	329.5	40	36	150	176	P	M	06/30/99	04/27/83		
BY-105	NCPLX	ASMD LKR	/PI	503	0	121	0.0	0.0	121	111	48	455	P	MP	08/31/99	07/01/86		
BY-106	NCPLX	ASMD LKR	/PI	562	0	132	0.0	63.7	132	119	84	478	P	MP	12/31/88	11/04/82		
BY-107	NCPLX	ASMD LKR	IS/IP	266	0	39	0.0	56.4	39	35	40	226	P	MP	06/30/99	10/15/86		
BY-108	NCPLX	ASMD LKR	IS/IP	228	0	33	0.0	27.5	33	26	154	74	MP	M	04/28/82	10/15/86		
BY-109	NCPLX	SOUND	IS/PI	290	0	31	0.0	157.1	31	26	57	233	F	PS	07/08/87	06/18/97		
BY-110	NCPLX	SOUND	IS/IP	398	0	21	0.0	213.3	21	17	103	295	M	S	09/10/79	07/26/84		
BY-111	NCPLX	SOUND	IS/IP	459	0	14	0.0	313.2	14	6	0	459	P	M	06/30/99	10/31/86		
BY-112	NCPLX	SOUND	IS/IP	291	0	24	0.0	116.4	24	12	0	291	P	M	06/30/99	04/14/88		
12 SINGLE-SHELL TANKS TOTALS:				4387	0	581	0.0	1567.8	581	498	754	3633						

A-9

HNF-EP-0182-150

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
C TANK FARM STATUS																		
C-101	NCPLX	ASMD LKR	IS/IP	88	0	4	0.0	0.0	4	0	88	0	M	M	11/29/83	11/17/87		
C-102	DC	SOUND	IS/IP	316	0	62	0.0	46.7	62	55	316	0	F	FP	09/30/95	06/18/76	08/24/95	
C-103	NCPLX	SOUND	/PI	198	79	18	0.0	0.0	97	83	119	0	F	S	12/31/98	07/28/87		
C-104	CC	SOUND	IS/IP	263	0	0	0.0	0.0	0	0	263	0	FP	P	02/01/00	07/25/80		
C-105	NCPLX	SOUND	IS/PI	134	2	10	0.0	0.0	12	8	132	0	F	S	02/29/00	08/05/84	08/30/95	
C-106	NCPLX	SOUND	/PI	74	68	0	0.0	0.0	68	62	6	0	F	PS	10/31/99	08/05/84	08/08/84	
C-107	DC	SOUND	IS/IP	257	0	30	0.0	40.8	30	25	257	0	F	S	06/30/99	00/00/00		
C-108	NCPLX	SOUND	IS/IP	66	0	4	0.0	0.0	4	0	66	0	M	S	02/24/84	12/05/74	11/17/84	
C-109	NCPLX	SOUND	IS/IP	66	4	4	0.0	0.0	8	4	62	0	M	PS	11/29/83	01/30/76		
C-110	DC	ASMD LKR	IS/IP	178	1	37	0.0	15.5	38	30	177	0	F	FMP	06/14/95	08/12/86	05/23/95	
C-111	NCPLX	ASMD LKR	IS/IP	57	0	4	0.0	0.0	4	0	57	0	M	S	04/28/82	02/25/70	02/02/95	
C-112	NCPLX	SOUND	IS/IP	104	0	6	0.0	0.0	6	1	104	0	M	PS	09/18/90	09/18/90		
C-201	NCPLX	ASMD LKR	IS/IP	2	0	0	0.0	0.0	0	0	2	0	P	MP	03/31/82	12/02/86		
C-202	EMPTY	ASMD LKR	IS/IP	1	0	0	0.0	0.0	0	0	1	0	P	M	01/19/79	12/09/86		
C-203	NCPLX	ASMD LKR	IS/IP	5	0	0	0.0	0.0	0	0	5	0	P	MP	04/28/82	12/09/86		
C-204	NCPLX	ASMD LKR	IS/IP	3	0	0	0.0	0.0	0	0	3	0	P	MP	04/28/82	12/09/86		
16 SINGLE-SHELL TANKS TOTALS:				1812	154	179	0.0	103.0	333	268	1658	0						
S TANK FARM STATUS																		
S-101	NCPLX	SOUND	/PI	427	12	83	0.0	0.0	95	80	211	204	F	PS	12/31/98	03/18/88		
S-102	DSSF	SOUND	/PI	492	0	93	0.0	56.8	93	69	106	387	P	FP	05/31/00	03/18/88	(c)	
S-103	DSSF	SOUND	IS/PI	237	1	45	0.0	23.9	46	39	9	227	M	S	04/30/00	06/01/89	01/28/00	
S-104	NCPLX	ASMD LKR	IS/IP	294	1	34	0.0	0.0	35	31	293	0	M	M	12/20/84	12/12/84		
S-105	NCPLX	SOUND	IS/IP	456	0	42	0.0	114.3	42	33	2	454	MP	S	09/26/88	04/12/89		
S-106	NCPLX	SOUND	/PI	328	0	10	0.0	203.6	10	2	0	328	P	FP	09/30/00	03/17/89	01/28/00	
S-107	NCPLX	SOUND	/PI	376	14	61	0.0	0.0	75	61	293	69	F	PS	06/30/99	03/12/87	(a)	
S-108	NCPLX	SOUND	IS/PI	432	0	0	0.0	199.8	0	0	5	427	P	MP	10/01/99	03/12/87	12/03/96	
S-109	NCPLX	SOUND	/PI	504	0	90	3.0	114.0	90	80	13	491	F	PS	09/30/00	12/31/88	(k)	
S-110	NCPLX	SOUND	IS/PI	390	0	30	0.0	203.1	30	27	131	259	F	PS	05/14/92	03/12/87	12/11/96	
S-111	NCPLX	SOUND	/PI	472	111	79	0.0	3.3	190	175	117	244	P	FP	09/30/99	08/10/89		
S-112	NCPLX	SOUND	/PI	523	0	81	0.0	125.1	81	70	6	517	P	FP	12/31/98	03/24/87		
12 SINGLE-SHELL TANKS TOTALS:				4931	139	648	3.0	1043.9	787	687	1185	3607						

A-10

HNF-EP-0182-150

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
SX TANK FARM STATUS																		
SX-101	DC	SOUND	/PI	448	0	112	0.0	0.0	112	99	0	448	P	FP	06/30/99	03/10/89	(g)	
SX-102	DSSF	SOUND	/PI	514	134	95	0.0	0.0	229	216	0	380	P	M	04/30/00	01/07/88		
SX-103	NCPLX	SOUND	/PI	634	0	147	0.0	0.0	147	132	115	519	F	S	06/30/99	12/17/87		
SX-104	DSSF	ASMD LKR	IS/PI	446	0	48	0.0	231.3	48	44	136	310	F	S	04/30/99	09/06/88		
SX-105	DSSF	SOUND	/PI	558	0	153	35.1	78.8	153	141	65	493	P	F	09/30/00	06/15/88		
SX-106	NCPLX	SOUND	IS/PI	397	0	37	0.0	147.5	37	31	0	397	F	PS	05/31/99	06/01/89		
SX-107	NCPLX	ASMD LKR	IS/IP	104	0	6	0.0	0.0	6	0	104	0	P	M	04/28/82	03/06/87		
SX-108	NCPLX	ASMD LKR	IS/IP	87	0	0	0.0	0.0	0	0	87	0	P	M	12/31/93	03/06/87		
SX-109	NCPLX	ASMD LKR	IS/IP	250	0	0	0.0	0.0	0	0	75	175	P	M	06/30/99	05/21/86		
SX-110	NCPLX	ASMD LKR	IS/IP	62	0	0	0.0	0.0	0	0	62	0	M	PS	10/06/76	02/20/87		
SX-111	NCPLX	ASMD LKR	IS/IP	122	0	8	0.0	0.0	8	3	122	0	M	PS	06/30/99	06/09/84		
SX-112	NCPLX	ASMD LKR	IS/IP	108	0	6	0.0	0.0	6	1	108	0	P	M	06/30/99	03/10/87		
SX-113	NCPLX	ASMD LKR	IS/IP	31	0	0	0.0	0.0	0	0	31	0	P	M	06/30/99	03/18/88		
SX-114	NCPLX	ASMD LKR	IS/IP	181	0	21	0.0	0.0	21	15	147	34	P	M	04/28/82	02/26/87		
SX-115	NCPLX	ASMD LKR	IS/IP	12	0	0	0.0	0.0	0	0	12	0	P	M	04/28/82	03/31/88		
15 SINGLE-SHELL TANKS				TOTALS:	3954	134	833	35.1	457.8	767	682	1064	2756					

T TANK FARM STATUS

T-101	NCPLX	ASMD LKR	IS/PI	102	1	20	0.0	25.3	21	16	37	64	F	S	06/30/99	04/07/93	
T-102	NCPLX	SOUND	IS/PI	32	13	3	0.0	0.0	16	11	19	0	P	FP	08/31/84	06/28/89	
T-103	NCPLX	ASMD LKR	IS/PI	27	4	3	0.0	0.0	7	3	23	0	F	FP	11/29/83	07/03/84	
T-104	NCPLX	SOUND	IS/PI	317	0	31	0.0	149.5	31	27	317	0	P	MP	12/31/99	06/29/89	10/07/99
T-105	NCPLX	SOUND	IS/PI	98	0	5	0.0	0.0	5	0	98	0	P	F	05/29/87	05/14/87	
T-106	NCPLX	ASMD LKR	IS/PI	21	2	0	0.0	0.0	2	2	19	0	P	FP	04/28/82	06/29/89	
T-107	NCPLX	ASMD LKR	IS/PI	173	0	34	0.0	11.0	34	20	173	0	P	FP	05/31/96	07/12/84	05/09/86
T-108	NCPLX	ASMD LKR	IS/PI	44	0	5	0.0	0.0	5	0	21	23	P	M	06/30/99	07/17/84	

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
T-109	NCPLX	ASMD LKR	IS/IP	58	0	10	0.0	0.0	10	3	0	58	M	M	06/30/99	02/25/93		
T-110	NCPLX	SOUND	IS/PI	369	1	48	0.0	50.3	48	43	368	0	P	FP	01/31/00	07/12/84	10/07/99	
T-111	NCPLX	ASMD LKR	IS/PI	446	0	38	0.0	9.6	38	35	446	0	P	FP	04/18/94	04/13/94	02/13/95	
T-112	NCPLX	SOUND	IS/IP	67	7	4	0.0	0.0	11	7	60	0	P	FP	04/28/82	08/01/84		
T-201	NCPLX	SOUND	IS/IP	29	1	4	0.0	0.0	5	1	28	0	M	PS	05/31/78	04/15/86		
T-202	NCPLX	SOUND	IS/IP	21	0	3	0.0	0.0	3	0	21	0	FP	P	07/12/81	07/06/89		
T-203	NCPLX	SOUND	IS/IP	35	0	5	0.0	0.0	5	0	35	0	M	PS	01/31/78	08/03/89		
T-204	NCPLX	SOUND	IS/IP	38	0	5	0.0	0.0	5	0	38	0	FP	P	07/22/81	08/03/89		
16 SINGLE-SHELL TANKS TOTALS:				1877	29	218	0.0	245.7	248	168	1703	145						
TX TANK FARM STATUS																		
TX-101	NCPLX	SOUND	IS/IP/CCS	87	3	8	0.0	0.0	11	7	74	10	F	P	06/30/99	10/24/85		
TX-102	NCPLX	SOUND	IS/IP/CCS	217	0	27	0.0	94.4	27	16	0	217	M	S	06/31/84	10/31/85		
TX-103	NCPLX	SOUND	IS/IP/CCS	157	0	18	0.0	68.3	18	11	0	157	F	S	06/30/99	10/31/85		
TX-104	NCPLX	SOUND	IS/IP/CCS	65	5	9	0.0	3.6	14	9	23	37	F	FP	06/30/99	10/16/84		
TX-105	NCPLX	ASMD LKR	IS/IP/CCS	609	0	25	0.0	121.5	25	14	0	609	M	PS	08/22/77	10/24/89		
TX-106	NCPLX	SOUND	IS/IP/CCS	341	0	37	0.0	134.6	37	30	0	341	M	S	06/30/99	10/31/85		
TX-107	NCPLX	ASMD LKR	IS/IP/CCS	36	1	6	0.0	0.0	7	1	8	27	FP	FP	06/30/99	10/31/85		
TX-108	NCPLX	SOUND	IS/IP/CCS	134	0	8	0.0	13.7	8	1	6	128	P	FP	06/30/99	09/12/89		
TX-109	NCPLX	SOUND	IS/IP/CCS	384	0	6	0.0	72.3	6	2	384	0	F	PS	06/30/99	10/24/89		
TX-110	NCPLX	ASMD LKR	IS/IP/CCS	462	0	14	0.0	115.1	14	10	37	425	M	PS	06/30/99	10/24/89		
TX-111	NCPLX	SOUND	IS/IP/CCS	370	0	10	0.0	98.4	10	6	43	327	M	PS	06/30/99	09/12/89		
TX-112	NCPLX	SOUND	IS/IP/CCS	649	0	26	0.0	94.0	26	21	0	649	P	PS	05/30/83	11/19/87		
TX-113	NCPLX	ASMD LKR	IS/IP/CCS	607	0	18	0.0	19.2	18	14	183	424	M	PS	06/30/99	04/11/83	09/23/94	
TX-114	NCPLX	ASMD LKR	IS/IP/CCS	535	0	17	0.0	104.3	17	11	4	531	M	PS	06/30/99	04/11/83	02/17/95	
TX-115	NCPLX	ASMD LKR	IS/IP/CCS	568	0	25	0.0	99.1	25	15	0	568	M	S	06/30/99	06/15/88		
TX-116	NCPLX	ASMD LKR	IS/IP/CCS	631	0	21	0.0	23.8	21	17	68	563	M	PS	06/30/99	10/17/89		
TX-117	NCPLX	ASMD LKR	IS/IP/CCS	626	0	10	0.0	54.3	10	5	29	597	M	PS	06/30/99	04/11/83		
TX-118	NCPLX	SOUND	IS/IP/CCS	286	0	0	0.0	89.1	0	0	21	265	F	S	02/01/00	12/19/79		
18 SINGLE-SHELL TANKS TOTALS:				6764	9	285	0.0	1205.7	294	190	880	5875						

A-12

HNF-EP-0182-150

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUM		VOLUME DETERMINATION			PHOTOS/VIDEOS		SEE FOOTNOTES FOR THESE CHANGES
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER- NATE LIQUID (Kgal)	DRAIN- ABLE INTER- STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN- ABLE LIQUID REMAIN (Kgal)	PUMP- ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	
TY TANK FARM STATUS																		
TY-101	NCPLX	ASMD LKR	IS/IP/CCS	118	0	2	0.0	8.2	2	0	72	46	P	F	06/30/89	06/22/89		
TY-102	NCPLX	SOUND	IS/IP/CCS	64	0	12	0.0	6.6	12	5	0	64	P	FP	06/28/82	07/07/87		
TY-103	NCPLX	ASMD LKR	IS/IP/CCS	162	0	20	0.0	11.5	20	16	162	0	P	FP	07/09/82	06/22/89		
TY-104	NCPLX	ASMD LKR	IS/IP/CCS	43	0	4	0.0	0.0	4	0	43	0	P	FP	06/27/80	11/03/87		
TY-105	NCPLX	ASMD LKR	IS/IP/CCS	231	0	12	0.0	3.6	12	10	231	0	P	M	04/28/82	09/07/89		
TY-106	NCPLX	ASMD LKR	IS/IP/CCS	21	0	3	0.0	0.0	3	0	21	0	P	M	06/30/89	06/22/89		
6 SINGLE-SHELL TANKS				TOTALS:	639	0	53	0.0	29.9	53	31	529	110					
U TANK FARM STATUS																		
U-101	NCPLX	ASMD LKR	IS/IP	25	3	3	0.0	0.0	6	2	22	0	P	MP	04/28/82	06/19/79		
U-102	NCPLX	SOUND	/PI	318	0	46	3.4	56.7	46	36	43	275	P	MP	09/30/00	06/08/89	(e)	
U-103	NCPLX	SOUND	IS/PI	418	1	33	0.0	98.9	34	28	13	404	P	FP	05/31/00	09/13/88	(f)	
U-104	NCPLX	ASMD LKR	IS/IP	122	0	0	0.0	0.0	0	0	79	43	P	MP	06/30/89	08/10/89		
U-105	NCPLX	SOUND	/PI	331	0	37	0.0	87.5	37	33	32	299	FM	PS	07/31/00	07/07/88	(b)	
U-106	NCPLX	SOUND	/PI	193	0	35	7.6	32.6	35	23	0	193	F	PS	09/30/00	07/07/88	(j)	
U-107	DSSF	SOUND	/PI	408	33	92	0.0	0.0	125	115	15	380	F	S	12/31/98	10/27/88		
U-108	NCPLX	SOUND	/PI	468	24	108	0.0	0.0	132	124	29	415	F	S	12/31/98	09/12/84		
U-109	NCPLX	SOUND	/PI	407	0	69	4.6	58.5	69	60	35	372	F	F	09/30/00	07/07/88	(d)	
U-110	NCPLX	ASMD LKR	IS/PI	186	0	18	0.0	0.0	18	14	186	0	M	M	12/30/84	12/11/84		
U-111	DSSF	SOUND	/PI	329	0	80	0.0	0.0	80	71	26	303	PS	FPS	12/31/98	06/23/88		
U-112	NCPLX	ASMD LKR	IS/IP	49	4	4	0.0	0.0	8	4	45	0	P	MP	02/10/84	08/03/89		
U-201	NCPLX	SOUND	IS/IP	5	1	1	0.0	0.0	2	1	4	0	M	S	08/15/79	08/08/89		
U-202	NCPLX	SOUND	IS/IP	5	1	1	0.0	0.0	2	1	4	0	M	S	08/15/79	08/08/89		
U-203	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	1	2	0	M	S	08/15/79	06/13/89		
U-204	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	1	2	0	M	S	08/15/79	06/13/89		
16 SINGLE-SHELL TANKS				TOTALS:	3270	69	527	15.6	334.2	596	514	537	2664					
GRAND TOTAL				33352	1454	3779	53.7	5373.9	5233	4416	11394	20504						

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS
FOOTNOTES:

Total Waste is calculated as the sum of Sludge and Saltcake plus Supernate. The category "Interim Isolated (II)" was changed to Intrusion Prevention (IP) in June 1993. Stabilization information from WHC-SD-RE-TI-178 SST STABILIZATION RECORD, latest revision, or SST Stabilization or Cognizant Engineer

Porosity values are 25% for saltcake and 15% for sludge, per HNF-2978, Rev. 1, "Updated Pumpable Liquid Volume Estimates and Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks," September 1999, with the exception of those tanks which have been interim stabilized and the porosities recalculated.

(a) S-106 Pumping was discontinued on January 3, 2000, to allow the waste levels to stabilize, so waste porosities and final waste volumes can then be calculated to determine whether this tank meets Interim Stabilization criteria. Waste levels have not been stabilized, as of September 30, 2000.

Note: In April 2000 issue, volumes were changed to reflect HNF-2978; however, because S-106 had been pumped and was "holding" to allow waste to stabilize, the volumes should not have been changed. In September 2000 issue, volumes were changed back to reflect actual pumping.

(b) U-105 Following information from Cognizant Engineer.

Saltwell pumping began December 10, 1999. The waste is pumped directly to SY-102. Pumping was halted on July 13, 2000, due to jet pump failure.

Saltcake volume has been adjusted to correspond to current waste removal.

Remaining volumes are based on the original estimated volumes in HNF-2978, Rev. 1.

Total Waste: 330.5 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 36.5 Kgal

Pumped this month: 0.0 Kgal

Total Pumped: 87.5 Kgal

Drainable Liquid Remaining: 36.5 Kgal

Pumpable Liquid Remaining: 32.5 Kgal

Sludge: 32.0 Kgal

Saltcake: 298.5 Kgal

In July 2000, a total of 1,450 gal of fluid was removed with 335 gal of water added for pump priming/equipment flushes, for a net removal of 1,095 gal of waste.

In addition, 1,907 gal of water were used as dilution and 300 gal of water were used for transfer line flushes. (No pumping since July 2000).

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(c) S-102 Following information from Cognizant Engineer

Pumping commenced March 18, 1999. Many pumping problems occurred over the following months, and the pump has been replaced several times. Pumping was interrupted again in June 2000. Remaining volumes are based on the original estimate volumes in HNF-2978, Rev. 1.

Total Waste: 492.2 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 93.3 Kgal
Pumped this month: 0.0 Kgal
Total Pumped: 56.8 Kgal
Drainable Liquid Remaining: 93.3 Kgal
Pumpable Liquid Remaining: 88.9 Kgal
Sludge: 106.0 Kgal
Saltcake: 387.2 Kgal

During June 2000, a total of 1,857 gal of fluid was removed with 1,989 gal of water added by flushes/priming for a net addition of 132 gal of tank waste. In addition, 2,129 gal of dilution water and 245 gal of water were added for transfer line flushes. (No pumping since June 2000).

(d) U-109 Following information from Cognizant Engineer

Pumping began March 11, 2000. Saltcake volume is adjusted to correspond to current waste removal. Remaining volumes are based on HNF-2978, Rev. 2.

Tank Waste: 406.5 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial: 68.5 Kgal
Pumped this month: 4.6 Kgal
Total Pumped: 58.5 Kgal
Drainable Liquid Remaining: 68.5 Kgal
Pumpable Liquid Remaining: 59.5 Kgal
Sludge: 36.0 Kgal
Saltcake: 371.5 Kgal

During September 2000, a total of 4,989 gal of fluid was removed with 374 gal of water added by pump priming/equipment flushes, for a net removal of 4,615 gal of tank waste. In addition, 5,414 gal of dilution water and 2,802 gal of water were used for transfer line flushes.

A-15

HNF-EP-0182-150

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENT

FOOTNOTES:

(e) U-102 Following information from Cognizant Engineer

Pumping began in this tank on January 20, 2000. Saltcake volume is adjusted to correspond to current waste removal.
Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 318.3 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial Liquid: 46.3 Kgal
Pumped this Month: 3.4 Kgal
Total Pumped: 56.7 Kgal
Drainable Liquid Remaining: 46.3 Kgal
Pumpable Liquid Remaining: 36.3 Kgal
Sludge: 43.0 Kgal
Saltcake: 275.3 Kgal

During September 2000, a total of 3,696 gal of fluid was removed with 299 gal of water added by pump priming/equipment flushes, for a net removal of 3,397 gal of waste.
In addition, 10,185 gal of water were used as dilution and 1,240 gal of water were used for transfer line flushes.

(f) U-103 Following information from Interim Stabilization documentation:

This tank was Interim Stabilized on September 11, 2000, with 417.5 Kgal Total Waste, .5 Kgal Supernate, 12.5 Kgal Sludge, and 404.5 Kgal Saltcake.

(g) SX-105 Following information from Cognizant Engineer:

Saltwell pumping began August 8, 2000.
Remaining volumes are based on HNF-2978, Rev. 2.

Tank Waste: 558.2 Kgal
Supernate: 0.0 Kgal
Drainable Interstitial Liquid: 153.0 Kgal
Pumped this month: 35.1 Kgal
Total Pumped: 78.8 Kgal
Drainable Liquid Remaining: 153.0 Kgal
Pumpable Liquid Remaining: 141.0 Kgal
Sludge: 65.0 Kgal
Saltcake: 493.2 Kgal

In September 2000, a total of 35,580 gal of fluid was removed with 505 gal of water added by pump priming, pump and saltwell screen installation, leak testing, and system flushes, for a net removal of 43,734 gal of waste.

In addition, 44,476 gal of dilution water and 1,410 gal of water for transfer lines flushes were used.

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(h) A-101 Following information from Cognizant Engineer

Pumping began on May 6, 2000.

Remaining volumes are based on the original estimated volumes in HNF-2978, Rev. 1.

Total Waste: 876.8 Kgal

Supernate: 483.8 Kgal

Drainable Interstitial Liquid: 95.0 Kgal

Pumped this Month: 0.0 Kgal

Total Pumped: 14.1 Kgal

Drainable Liquid Remaining: 590.0 Kgal

Pumpable Liquid Remaining: 573.6 Kgal

Sludge: 3.0 Kgal

Saltcake: 380.0 Kgal

During August 2000, a total of 0 gal of fluid was removed from the tank with 273 of water added by pump priming/equipment flushes for a net removal of -273 gal of waste.

This number will be subtracted against the next waste removed.

In addition, 0 gal of water was used as dilution and 0 gal of water was used for transfer line flushes. (No pumping in September 2000).

(i) AX-101 Following information from Cognizant Engineer

Pumping began July 29, 2000.

Remaining volumes are based on the original estimated volumes in HNF-2978, Rev. 1.

Total Waste: 675.6 Kgal

Supernate: 377.6 Kgal

Drainable Interstitial Liquid: 73.7 Kgal

Pumped this month: 0.0 Kgal

Total pumped: 8.366 Kgal

Drainable Liquid Remaining: 451.8 Kgal

Pumpable Liquid Remaining: 434.6 Kgal

Sludge: 3.0 Kgal

Saltcake: 295.0 Kgal

In August 2000, a total of 7,292 gal of fluid was removed from the tank with 241 gal of water added by pump priming/equipment, for a net removal of 7,051 gal of waste.

In addition, 18,332 gal of water were used as dilution and 930 gal of water were used for transfer line flushes. (No pumping in September 2000).

TABLE A-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

September 30, 2000

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(j) U-106 Following information from Cognizant Engineer:

Pumping began August 24, 2000.

Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 193.3 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 35.1 Kgal

Pumped this month: 7.6 Kgal

Total Pumped: 32.6 Kgal

Drainable Liquid Remaining: 35.1 Kgal

Pumpable Liquid Remaining: 23.4 Kgal

Sludge: 0.0 Kgal

Saltcake: 193.3 Kgal

In September 2000, a total of 8,478 gal of fluid was removed with a total of 927 gal of water added by pump priming and saltwell screen installation, for a net removal of 7,551 gal of waste.

In addition, 8,290 gal of water were used as dilution and 401 gal of water were used for transfer line flushes.

(k) S-109 Following information from Cognizant Engineer:

Pumping began September 23, 2000.

Remaining volumes are based on HNF-2978, Rev. 2.

Total Waste: 504.0 Kgal

Supernate: 0.0 Kgal

Drainable Interstitial Liquid: 90.4 Kgal

Pumped this Month: 3.0 Kgal

Total Pumped: 1114.0 Kgal

Drainable Liquid Remaining: 90.4 Kgal

Pumpable Liquid Remaining: 80.0 Kgal

Sludge: 13.0 Kgal

Saltcake: 491.0 Kgal

In September 2000, a total of 4,208 gal of fluid was removed with 1,241 gal of water added by pump priming/system flushes, for a net removal of 2,967 gal of waste.

In addition, 55 gal of water were used for one transfer line flush.

APPENDIX B
PERFORMANCE SUMMARY

TABLE B-1. SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANK (DST) SYSTEM

September 30, 2000

All volumes in Kgallons

- The DST system received waste additions from SST Stabilization, A-350 catch tank & misc. water in September.
- There was a net change of +160,000 gallons in the DST system for September 2000.
- The total DST inventory as of September 30, 2000 was 20.455 million gallons.
- There were 0 Kgals of Saltwell Liquid (SWL) pumped to the East Area DSTs (101-AN) in September.
- There were ~132 Kgals of Saltwell Liquid (SWL) pumped to the West Area DSTs (102-SY) in September.
- The SWL numbers are preliminary and are subject to change once cognizant engineers do a validation, the volumes reported contain actual waste volume plus any water added for dilution and transfer line flushes.
- There was a transfer of waste (cross-site) from Tank 241-SY-102 (West Area) to Tank 241-AP-107 (East Area) in September. ~381,000 gallons of Tank 241-SY-102 waste (primarily SST stabilization waste) and ~26,000 gallons of transfer line flush water was received into Tank 241-AP-107 from this transfer.
- The projected "DST Waste Receipts", "Saltwell Pumping Volumes" and "Waste Inventories" depicted in the inventory graphic tables and spreadsheets, will be updated next month.

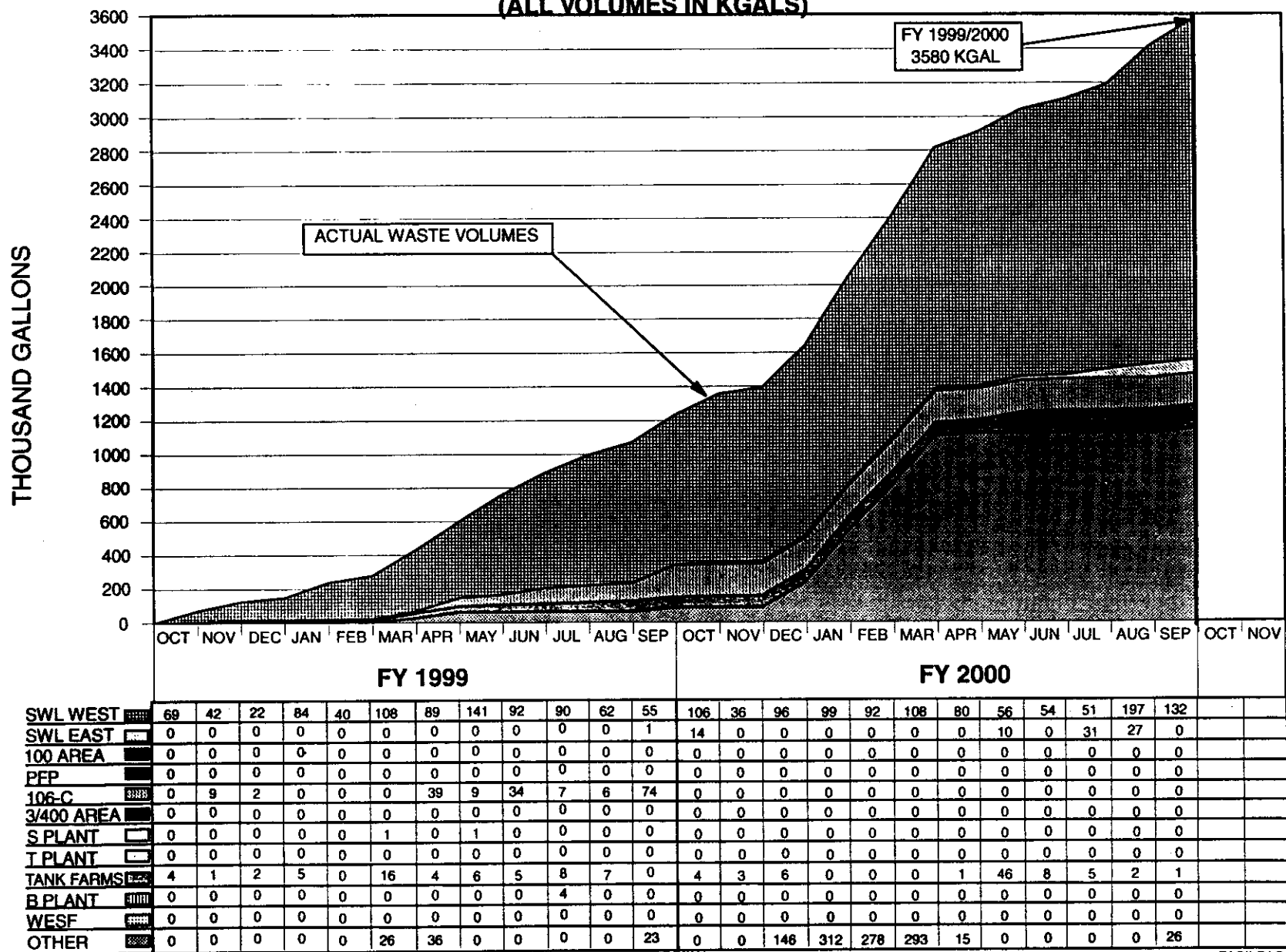
SEPTEMBER 2000 DST WASTE RECEIPTS					
FACILITY GENERATIONS		OTHER GAINS ASSOCIATED WITH		OTHER LOSSES ASSOCIATED WITH	
SWL (West)	+132 Kgal (2SY)	SLURRY	+2 Kgal	SLURRY	-1 Kgal
Tank Farms	+1 Kgal (2AW)	CONDENSATE	+7 Kgal	CONDENSATE	-3 Kgal
X-Site Flush	+26 Kgal (7AP)	INSTRUMENTATION	+0 Kgal	INSTRUMENTATION	-0 Kgal
TOTAL	+159 Kgal	UNKNOWN	+3 Kgal	UNKNOWN	-7 Kgal
		TOTAL=	+12 Kgal	TOTAL=	-11 Kgal

PROJECTED VERSUS ACTUAL WASTE VOLUMES						
	ACTUAL DST WASTE RECEIPTS	PROJECTED DST WASTE RECEIPTS	MISC. DST CHANGES (+/-)	WVR	NET DST CHANGE	TOTAL DST VOLUME
OCT99	124	127	-19	0	105	19098
NOV99	39	209	-5	0	34	19132
DEC99	248	173	-17	0	231	19363
JAN00	411	149	-104	0	307	19670
FEB00	360	462	-29	0	331	19999
MAR00	401	130	-15	0	386	20385
APR00	96	441	-19	-641	-564	19821
MAY00	132	395	19	-41	110	19931
JUN00	62	174	0	0	62	19993
JUL00	87	190	-5	0	82	20075
AUG00	226	201	-6	0	220	20295
SEP00	159	186	1	0	160	20455

NOTE: The "PROJECTED DST WASTE RECEIPTS" and "WVR" numbers were updated in October 1999, as supplied by cognizant engineers.

241-A Evaporator Waste Volume Reduction:	
Campaign 94-1 (04/15/94 - 08/13/94)	-2417
Campaign 94-2 (09/22/94 - 11/18/94)	-2787
Campaign 95-1 (06/09/95 - 07/26/95)	-2161
Campaign 96-1 (05/07/96 - 05/25/96)	-1117
Campaign 97-1 (03/24/97 - 04/02/97)	-351
Campaign 97-2 (09/16/97 - 09/30/97)	-653
Campaign 98-1 (07/24/99 - 08/15/99)	-818
Campaign 00-1 (04/20/00 - 05/05/00)	-682
Total waste reduction (WVR) since restart on 4/15/94	-10986

COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES (ALL VOLUMES IN KGALS)



NOTE: The Other Category is for Waste Generations from, Evaporator Training, Pressure Tests, Cross-Site Transfers and Tank 101-SY remediation work

FACILPAC

FIGURE B-1. COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES
(All volumes in Kgals)

APPENDIX C
DOUBLE-SHELL TANK WASTE TYPE
AND SPACE ALLOCATION

Table C-1. Double-Shell Tank Waste Inventory - September 30, 2000

TOTAL AVAILABLE DST SPACE									
NON-AGING =								37260	
AGING =								3620	
TOTAL								34280	
MONTHLY INVENTORY CHANGES									
DSTO TOTAL								20285	
DSTO TOTAL								20456	
CHANGES								160	
TANK NAME	WASTE TYPE	TOTAL INVENTORY (l)	TOTAL SUPERNATE	TOTAL SOLIDS (g)	SALTCAKE (l)	SALTCAKE LIQUID	SALTCAKE SLUDGE (l)	SALTCAKE LIQUID	THREATS UNARMED TANK SPACE
241-AA-101	DN	225	225	0	0	22	0	0	815
241-AA-102	CC	1066	886	86	0	0	0	0	86
241-AA-103	D88F	886	902	467	0	114	0	0	181
241-AA-104	D88F	1063	904	449	0	112	0	0	87
241-AA-105	D88F	1128	639	489	0	122	0	0	12
241-AA-106	CC	39	22	17	4	0	0	0	121
241-AA-107	CC	1042	789	247	0	0	0	0	86
241-AA-108	D88F	1114	1114	0	0	0	0	0	28
241-AA-109	CC	1080	1080	0	0	0	0	0	50
241-AA-110	CC	283	283	0	0	0	0	0	657
241-AA-111	CC	1110	1110	0	0	0	0	0	30
241-AA-112	D88F	1138	1047	86	0	22	0	0	4
241-AA-113	DN	634	634	0	0	0	0	0	516
241-AA-114	DN	448	448	0	0	0	0	0	695
241-AA-115	DN	34	34	0	0	0	0	0	1105
241-AA-116	D88F	1127	830	307	307	77	0	0	13
241-AA-117	DN	86	28	36	36	0	0	0	1075
241-AA-118	NCNV	510	147	363	47	316	0	0	630
241-AA-119	DN	1116	887	231	0	86	0	0	22
241-AA-120	NCNV	427	172	255	0	0	0	0	713
241-AA-121	D88F	742	603	238	238	80	0	0	388
241-AA-122	DC	138	46	94	0	0	0	14	841
241-AA-123	DN	882	378	216	0	216	32	32	388
241-AA-124	NCNV	880	880	48	0	48	0	0	71
241-AA-125	NCNV	880	880	48	0	48	0	0	188
241-AA-126	CC	871	388	643	0	146	0	0	368
241-AA-127	DN	784	713	71	0	71	0	0	368
241-AA-128	CC	744	378	366	0	366	0	0	368
241-AA-129	CC	2045	18721	4734	3382	816	1432	248	10833

NOTE: All Volumes in Kilo-Gallons (Kgals)

(1) Total Inventory = (Total Supernate + Total Solids)

(2) Saltcake Includes Saltcake Liquids; Sludge Includes Sludge Liquid

(3) Total Solids = (Saltcake + Sludge)

Tank Space Usage

TANK SPACE CHARGE	10845
2000 TANK SPACE	10845
CHANGES	-180
OPERATIONAL SPACE	815
241-AA-101	885
241-AA-102	1108
241-AA-103	1075
241-AA-104	713
241-AA-105	399
241-AA-106	366
241-AA-107	8258
TOTAL	8258
RESTRICTED SPACE	62
241-AA-101	62
241-AA-102	80
241-AA-103	80
241-AA-104	71
241-AA-105	71
TOTAL	304
WATCHLIST SPACE	181
241-AA-101	87
241-AA-102	12
241-AA-103	13
241-AA-104	189
241-AA-105	386
241-AA-106	630
241-AA-107	818
241-AA-108	4
241-AA-109	630
241-AA-110	22
241-AA-111	641
241-AA-112	348
TOTAL	4418
EMERGENCY SPACE	-1140
LAW or LAW RETURN	-1140
RESIDUAL SPACE	2139

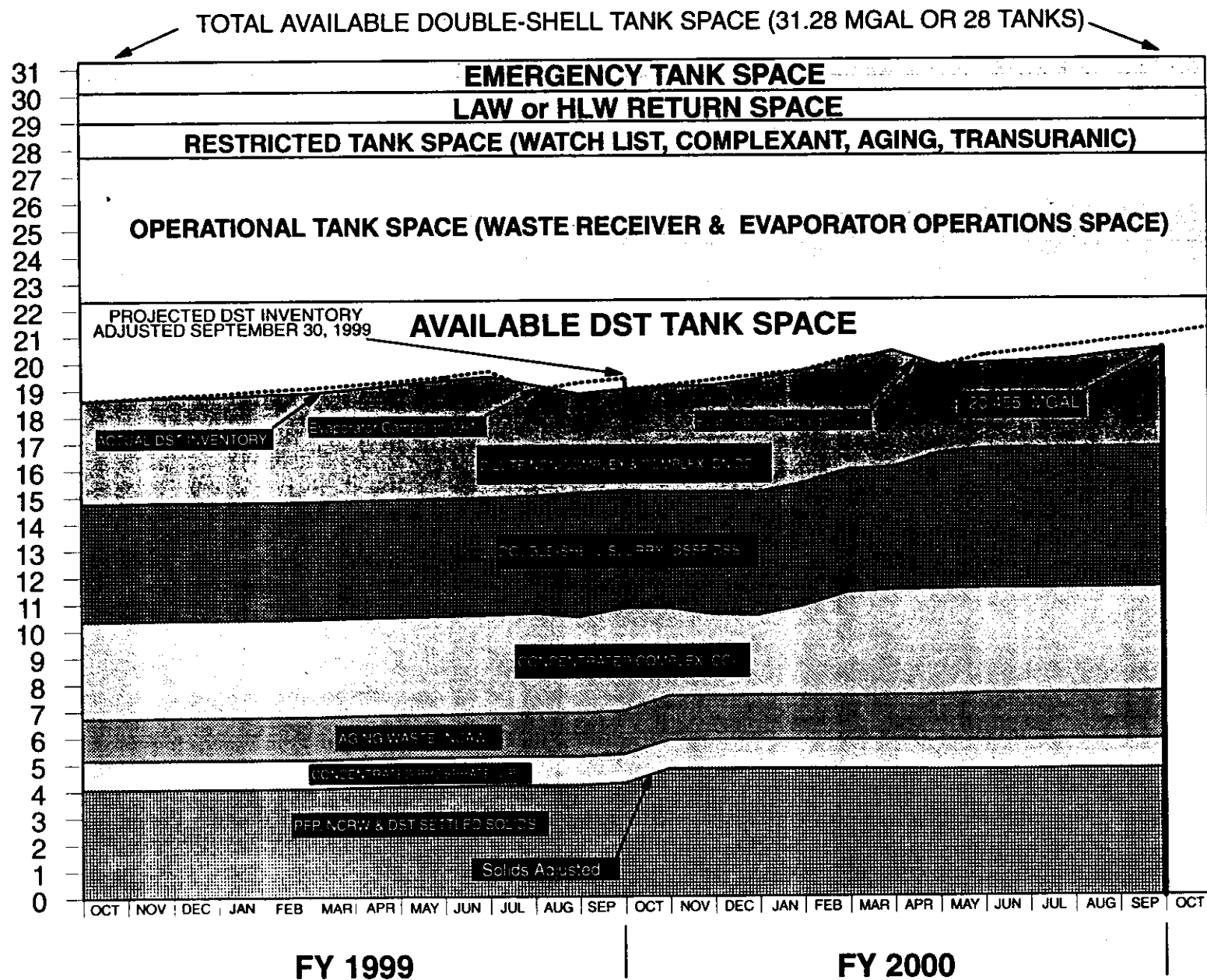
Inventory Calculation by Waste Type:

DILUTE SUPERNATE (DN)	225
241-AA-101	621
241-AA-102	448
241-AA-103	34
241-AA-104	29
241-AA-105	147
241-AA-106	887
241-AA-107	172
241-AA-108	378
241-AA-109	713
241-AA-110	3682
TOTAL DN	1172
TOTAL SOLIDS	1172
SALTCAKE SUPERNATE (D88F)	502
241-AA-101	804
241-AA-102	809
241-AA-103	1114
241-AA-104	1047
241-AA-105	820
241-AA-106	803
TOTAL D88F	6229
TOTAL SOLIDS	2030
DST SLUDGE / SALTCAKE LIQUID	22
241-AA-101	114
241-AA-102	112
241-AA-103	4
241-AA-104	43
241-AA-105	22
241-AA-106	77
241-AA-107	8
241-AA-108	160
TOTAL SLUDGE / SALTCAKE LIQUID	1069
CONCENTRATED SUPERNATE (DC)	88
241-AA-101	22
241-AA-102	78
241-AA-103	283
241-AA-104	1110
241-AA-105	45
241-AA-106	309
241-AA-107	378
TOTAL DC	3845
TOTAL SOLIDS	1388
AGING SUPERNATE (AW)	863
241-AA-101	902
TOTAL AW	1765
TOTAL SOLIDS	134
PHOSPHATE SUPERNATE (CP)	1080
241-AA-101	1080
TOTAL CP	1080
GRAND TOTALS	3897
DILUTE SUPERNATE (DN)	3897
SALTCAKE SUPERNATE (D88F)	6229
CONCENTRATED SUPERNATE (DC)	3845
AGING SUPERNATE (AW)	1765
DST SLUDGE / SALTCAKE LIQUID	1069
TOTAL	20465

Table C-2. Double-Shell Tank Waste Inventory - September 30, 2000

TOTAL AVAILABLE USABLE AS OF SEPTEMBER 30, 2000=			10115 KGALS
WATCH LIST TANK SPACE:	TANK	WASTE TYPE	AVAILABLE SPACE
<i>Unusable DST Headspace - Due to Special Restrictions Placed on the Tanks, as Stated in the "Wyden Bill"</i>	AN-103	DSS	181 KGALS
	AN-104	DSSF	87 KGALS
	AN-105	DSSF	12 KGALS
	AW-101	DSSF	13 KGALS
	SY-101	CC	169 KGALS
	SY-103	CC	396 KGALS
	TOTAL=		888 KGALS
AVAILABLE TANK SPACE=		10835 KGALS	
MINUS WATCH LIST SPACE=		-858 KGALS	
TOTAL AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS=		9977 KGALS	
RESTRICTED TANK SPACE:	TANK	WASTE TYPE	AVAILABLE SPACE
<i>DST Headspace Available to Store Only Specific Waste Types</i>	AN-102	CC	85 KGALS
	AN-107	CC	98 KGALS
	AP-102	CP	50 KGALS
	AZ-101	AW	71 KGALS
	AZ-102	AW	0 KGALS
	TOTAL=		304 KGALS
AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS=		9977 KGALS	
MINUS RESTRICTED SPACE=		-304 KGALS	
TOTAL AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS=		9673 KGALS	
OPERATIONAL TANK SPACE	TANK	WASTE TYPE	AVAILABLE SPACE
<i>DST Headspace Available For Facility Generated Waste and 242-A Evaporator Operations</i>	AN-101	DN	915 KGALS
	AP-107	DN	695 KGALS
	AP-108	DN	1106 KGALS
	AW-102	DN	1075 KGALS
	AW-105	NCRW	713 KGALS
	AW-106	DSSF	398 KGALS
	SY-102	DN	356 KGALS
	TOTAL=		5268 KGALS
AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS=		9673 KGALS	
MINUS OPERATIONAL SPACE=		-5268 KGALS	
TOTAL AVAILABLE SPACE AFTER OPERATIONAL SPACE DEDUCTIONS=		4415 KGALS	
UNALLOCATED TANK SPACE	TANK	WASTE TYPE	AVAILABLE SPACE
<i>Non-Allocated DST Headspace</i>	AN-106	CC	1101 KGALS
	AP-101	DSSF	26 KGALS
	AP-103	CC	857 KGALS
	AP-104	CC	30 KGALS
	AP-105	DSSF	4 KGALS
	AP-106	DN	516 KGALS
	AW-103	NCRW	830 KGALS
	AW-104	DN	22 KGALS
	AY-101	DC	841 KGALS
	AY-102	DN	388 KGALS
TOTAL NON-ALLOCATED TANK SPACE=		4415 KGALS	
EMERGENCY TANK SPACE		-1140 KGALS	
LAW or HLW RETURN SPACE:		-1140 KGALS	
TOTAL TANK SPACE AVAILABLE AFTER ALL DEDUCTIONS		2135 KGALS	

MILLIONS OF GALLONS



HNF-EP-0182-150

TOTWASTE1

FIGURE C-1. TOTAL DOUBLE-SHELL TANK INVENTORY

APPENDIX D
WASTE TANK SURVEILLANCE MONITORING TABLES

Temperatures are taken in the waste unless in-waste thermocouples are out of service. Temperatures below are the highest temperatures recorded in these tanks during this month.

HYDROGEN (FLAMMABLE GAS)					
<u>Single-Shell Tanks</u>			<u>Double-Shell Tanks</u>		
Tank No.	Temp.	Officially Added to Watch List	Tank No.	Temp.	Officially Added to Watch List
A-101	144	1/91	AN-103	104	1/91
AX-101	128	1/91	AN-104	103	1/91
AX-103	109	1/91	AN-105	100	1/91
S-102	99	1/91	AW-101	98	6/93
S-111	88	1/91	SY-101	98	1/91
S-112	83	1/91	SY-103	95	1/91
SX-101	130	1/91	6 DSTs		
SX-102	140	1/91			
SX-103	158	1/91			
SX-104	138	1/91			
SX-105	168	1/91			
SX-106	98	1/91			
SX-109 (1)	135	1/91			
T-110	65	1/91			
U-103	87	1/91			
U-105	89	1/91			
U-107	78	12/93			
U-108	86	1/92			
U-109	84	1/91			
19 SSTs					

19 Single-Shell Tanks
6 Double-Shell Tanks
25 Tanks on Watch List

TABLE D-1. TEMPERATURE MONITORING IN WATCH LIST TANKS
(sheet 2 of 2)

Notes:**Unreviewed Safety Question (USQ):**

When a USQ is declared, special controls are required, and work in the tanks is limited. There are currently no USQs on single-shell tanks. There is a USQ on double-shell tank SY-101 for liquid level increase.

Hydrogen/Flammable Gas:

These tanks are suspected of having a significant potential for hydrogen/flammable gas generation, entrapment, and episodic release. The USQ associated with these tanks was closed in September 1998. Twenty-five tanks (19 SST and 6 DST) remain on the Hydrogen Watch List.

Organic Salts:

These tanks contain concentrations of organic salts ≥ 3 weight% of total organic carbon (TOC)(equivalent to 10 wt% sodium acetate). The USQ associated with these tanks was closed in October 1998, and 18 organic complexant tanks were removed from the Organic Watch List in December 1998. The remaining two organic salts tank (C-102 and C-103) were removed from the Organic Watch List in August 2000.

High Heat:

These tanks contain heat generating strontium-rich sludge and require drainable liquid to be maintained in the tank to promote cooling. There are currently nine tanks on the High Heat Load List but no tanks on the High Heat Load Watch List.

Active ventilation:

There are 15 single-shell tanks on active ventilation (seven are on the Watch List as indicated by an asterisk):

C-105	SX-107
C-106 (2)	SX-108
SX-101 *	SX-109 * (1)
SX-102 *	SX-110
SX-103 *	SX-111
SX-104 *	SX-112
SX-105 *	SX-114
SX-106 *	

Footnotes:

- (1) Tank SX-109 is on the Hydrogen Watch List as it has the potential for flammable gas accumulation only because other SX tanks vent through it.
- (2) Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999.
- (3) Tanks C-102 and C-103 were removed from the Organics Salts Watch List on August 23, 2000.

TABLE D-2. TEMPERATURE MONITORING IN NON-WATCH LIST TANKS

September 30, 2000

SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>26,000 Btu/hr)

Nine tanks have high heat loads for which temperature surveillance requirements are established by HNF-SD-WM-TSR-006, Rev 1, *Tank Waste Remediation System Technical Safety Requirements*, December 1999.

In an analysis, WHC-SD-WM-SARR-010, Rev 1, *Heat Removal Characteristics of Waste Storage Tanks*, Kummerer, 1995, it was estimated that nine tanks have heat sources >26,000 Btu/hr, which is the new parameter for determining high heat load tanks. See also document HNF-SD-WM-BIO-001, Rev 1, *Tank Waste Remediation System Basis for Interim Operation*, Noorani, 1998.

Temperatures in these tanks did not exceed TSR requirements for this month, and are monitored by the Tank Monitor and Control System (TMACS), unless indicated otherwise. All high heat load tanks are on active ventilation.

<u>Tank No.</u>	<u>Temperature (F.)</u>
C-106 (1)	76 (Riser #8)
SX-103	158
SX-107	166
SX-108	184
SX-109 (2)	135
SX-110	165
SX-111	185
SX-112	150
SX-114	175

9 Tanks

- Notes:
- (1) C-106 was removed from the High Heat Load Watch List on December 16, 1999. The final thermal analysis report, RPP-6463, Rev. 0, "Thermal Analysis for Tanks 241-AY-102 and C-106," was issued August 9, 2000. The report concluded that the best estimate heat load for C-106 is between 7,000 and 11,000 Btu/hr. Although it no longer meets the criteria for a high heat load tank, it will take an AB change to revise the temperature control limits and monitoring frequency. The AB Amendment request is pending review by ORP.
 - (2) SX-109 is on the Hydrogen Watch List as it has the potential for flammable gas accumulation only because the other SX tanks vent through it.

SINGLE-SHELL TANKS WITH LOW HEAT LOADS (<26,000 Btu/hr)

There are 114 low heat load non-watch list tanks. Temperatures in tanks connected to TMACS are monitored by TMACS; temperatures in those tanks not yet connected to TMACS are manually taken semiannually in January and July. Temperatures obtained semiannually have been within historical ranges for the applicable tank.

No temperatures have been obtained for several years in the tanks listed below. Most of these tanks have no thermocouple tree.

<u>Tank No.</u>	<u>Tank No.</u>
BX-104	TX-101
BY-102	TX-110
BY-109	TX-114
C-204	TX-116
SX-115	TX-117
T-102	U-104
T-105	

TABLE D-3. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR
September 30, 2000

Added/Deleted dates may differ from dates that tanks were officially added to the Watch Lists. (See Table A-1).

	Ferrocyanide	Hydrogen	Organics	High Heat	Total Tanks		
					SST	DST	Total
1/91 Original List Response to Public Law 101-5	23	23	8	1	47	5	52
Added 2/91 (revision to Original List)	1 T-107				1		1
Total December 31, 1991	24	23	8	1	48	5	53
Added 6/92		1 AW-101				1	1
Total December 31, 1992	24	24	8	1	49	6	54
Added 3/93 Deleted 7/93	-4 (BX-110) (BX-111) (BY-101) (T-101)		1 U-111		-4		
Added 12/93		1 (U-107)			0		
Total December 31, 1993	20	25	9	1	46	6	51
Added 2/94 Added 5/94			1 T-111 10 A-101 AX-102 C-102 S-111 SX-103 TY-104 U-103 U-105 U-203 U-204		1 4		
Deleted 11/94	-2 (BX-102) (BX-108)				-2		
Total December 31, 1994	18	25	20	1	46	6	51
Deleted 6/96	-4 (C-108) (C-109) (C-111) (C-112)				-4		
Deleted 9/96	-14 (BY-103) (BY-104) (BY-106) (BY-106) (BY-107) (BY-108) (BY-110) (BY-111) (BY-112) (T-107) (TX-118) (TY-101) (TY-103) (TY-104)				-12		
Deleted 12/98			-18 (A-101) (AX-102) (B-103) (S-102) (S-111) (SX-103) (SX-106) (T-111) (TX-106) (TX-118) (TY-104) (U-103) (U-106) (U-108) (U-107) (U-111) (U-203) (U-204)		-10		
Total December 31, 1998	0	25	2	1	22	6	28
Deleted 12/99			-1 (C-102)	-1 (C-108)	-1		
Deleted 08/00			-1 (C-103)		-1		
Total September 30, 2000	0	25	0	0	19	6	25

Eighteen of the 20 tanks were removed from the Organics Watch List in December 1998; the last two were removed August 2000; eight of the eighteen tanks are still on the Hydrogen Watch List, which is the only remaining Watch List.

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 6)

September 30, 2000

The following table indicates whether Single-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month:

NOTE:

All Watch List and High Heat tank temperature monitoring is in compliance. (4)

All Dome Elevation Survey monitoring is in compliance

All Psychrometrics monitoring is in compliance (2).

Drywell monitoring no longer required (5).

In-tank photos/videos are taken "as needed"

LEGEND:

(Shaded)	= in compliance with all applicable documentation
N/C	= noncompliance with applicable documentation
O/S	= Out of Service
Neutron	= LOW readings taken by Neutron probe
POP	= Plant Operating Procedure, TO-040-850
MT/FIC/ENRAF	= Surface level measurement devices
OSD	= Operating Spec. Doc., OST-T-151-00013, 00030, 00031
N/A	= Not applicable (not monitored, or no monitoring schedule)
None	= Applicable equipment not installed
FSAR/TSR	= Final Safety Analysis Report/Technical Safety Requirements

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
A-101	X			LOW	None	None		
A-102				None	None	None	None	None
A-103				LOW	None	None		
A-104				None	None	None		None
A-106				None		None	None	None
A-108				None	None	None		None
AX-101	X			LOW	None	None		(8)
AX-102				None	None	None		None
AX-103	X			None	None	None		None
AX-104				None	None	None		None
B-101				None	None	None		None
B-102				ENRAF	None	None		None
B-103				None	None	None		O/S
B-104				LOW	None	None		
B-106				LOW	None	None		
B-108				ENRAF	None	None		None
B-107				None	None	None		None
B-108				None	None	None		None
B-109				None	None	None		None
B-110				LOW	None	None		
B-111				LOW	None	None		
B-112				ENRAF	None	None		None
B-201				ENRAF	None	None		None
B-202				ENRAF	None	None		None
B-203				ENRAF	None	None		None
B-204				ENRAF	None	None		None
BX-101				ENRAF	None	None		None
BX-102				None	None	None		None
BX-103				ENRAF	None	None		None
BX-104			None	ENRAF	None	None		None
BX-106				None	None	None		None
BX-108				ENRAF	None	None		None
BX-107				ENRAF	None	None		None

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 2 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
BX-108				None	None	None		None
BX-109				None	None	None		None
BX-110				None	None	None		None
BX-111				LOW	None	None		
BX-112				ENRAF	None	None		None
BY-101				LOW		None	None	
BY-102			None	LOW	None	None		
BY-103				LOW	None	None		
BY-104				LOW		None	None	
BY-105				LOW		None	None	
BY-106				LOW		None	None	
BY-107				LOW		None	None	
BY-108				None		None	None	None
BY-109			None	LOW	None	O/S	None	
BY-110				LOW	None	None		
BY-111				LOW	None	None		
BY-112				LOW		None	None	
C-101				None		None	None	None
C-102 (10)				None	None		None	None
C-103 (10)				ENRAF	None	None		None
C-104				None	None	None		None
C-105				None	None	None		None
C-106 (3)		X		ENRAF	None	None		None
C-107				ENRAF	None	None		None
C-108				None		None	None	None
C-109				None		None	None	None
C-110				MT		None	None	None
C-111				None		None	None	None
C-112				None	None	None		None
C-201				None		None	None	None
C-202				None		None	None	None
C-203				None		None	None	None
C-204			None	None		None	None	None
S-101				ENRAF	None	None		
S-102	X			ENRAF	None	None		
S-103				ENRAF	None	None		
S-104				LOW	None	None		
S-105				LOW	None	None		
S-106				ENRAF	None	None		
S-107				ENRAF	None	None		None
S-108				LOW	None	None		
S-109				LOW	None	None		
S-110				LOW	None	None		
S-111	X			ENRAF	None	None		
S-112	X			LOW	None	None		
SX-101	X			LOW	None	None		
SX-102	X			LOW	None	None		
SX-103	X			LOW	None	None		
SX-104	X			LOW	None	None		
SX-105	X			LOW	None	None		O/S (11)
SX-106	X			LOW	None	None		
SX-107		X		None	None	None		None
SX-108		X		None	None	None		None

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 3 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
SX-109	X	X		None	None	None		None
SX-110		X		None	None	None		None
SX-111		X		None	None	None		None
SX-112		X		None	None	None		None
SX-113				None	None	None		None
SX-114		X		None	None	None		None
SX-115			None	None	None	None		None
T-101				None	None	None		None
T-102			None	ENRAF	None	None		None
T-103				None	None	None		None
T-104				LOW	None	None		
T-105			None	None	None	None		None
T-106				None	None	None		None
T-107				ENRAF	None	None		None
T-108				ENRAF	None	None		None
T-109				None	None	None		None
T-110	X			LOW	None	None		
T-111				LOW	None	None		
T-112				ENRAF	None	None		None
T-201				MT		None	None	None
T-202				MT		None	None	None
T-203				None		None	None	None
T-204				MT		None	None	None
TX-101			None	ENRAF	None	None		None
TX-102				LOW	None	None		
TX-103				None	None	None		None
TX-104				None	None	None		None
TX-105				None	None	None		None (B)
TX-106				LOW	None	None		
TX-107				None	None	None		None
TX-108				None	None	None		None
TX-109				LOW	None	None		
TX-110			None	LOW	None	None		
TX-111				LOW	None	None		
TX-112				LOW	None	None		
TX-113				LOW	None	None		
TX-114			None	LOW	None	None		
TX-115				LOW	None	None		
TX-116			None	None	None	None		None
TX-117			None	LOW	None	None		
TX-118				LOW	None	None		
TY-101				None	None	None		None
TY-102				ENRAF	None	None		None
TY-103				LOW	None	None		
TY-104				ENRAF	None	None		None
TY-105				None	None	None		None
TY-106				None	None	None		None
U-101				MT		None	None	None
U-102				LOW	None	None		
U-103	X			ENRAF	None	None		
U-104			None	None		None	None	None
U-105	X			ENRAF	None	None		
U-106				ENRAF	None	None		

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 4 of 6)

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7) Neutron
	Watch List	High Heat			MT	FIC	ENRAF	
U-107	X			ENRAF	None	None		
U-108	X			LOW	None	None		
U-109	X			ENRAF	None	None		
U-110				None	None	None		None
U-111				LOW	None	None		
U-112				None		None	None	None
U-201				MT		None	None	None
U-202				MT		None	None	None
U-203				None	None	None		None
U-204				ENRAF	None	None		None
Catch Tanks and Special Surveillance Facilities								
A-302-A	N/A	N/A	N/A	(B)	None	None		None
A-302-B	N/A	N/A	N/A	(B)		None	None	None
ER-311	N/A	N/A	N/A	(B)	None	None		None
AX-162	N/A	N/A	N/A	(B)		None	None	None
AZ-161	N/A	N/A	N/A	(B)	None	O/S (10)	None	None
AZ-164	N/A	N/A	N/A	(B)		None	None	None
BX-TK/SMP	N/A	N/A	N/A	(B)		None	None	None
A-244 TK/SMP	N/A	N/A	N/A	(B)	None	None	None	None
AR-204	N/A	N/A	N/A	(B)			None	None
A-417	N/A	N/A	N/A	(B)	None	None	None	None
A-360	N/A	N/A	N/A	(B)	None	None	None	None
CR-003	N/A	N/A	N/A	(B)	None	None	None	None
Vent Sta.	N/A	N/A	N/A	(B)		None	None	None
244-B TK/SMP	N/A	N/A	N/A	(B)	None	None	None	None
S-302	N/A	N/A	N/A	(B)	None	None		None
S-304	N/A	N/A	N/A	(B)	None	None		None
TX-244 TK/SMP	N/A	N/A	N/A	(B)		None	None	None
TX-302-B	N/A	N/A	N/A	(B)		None	None	None
TX-302-C	N/A	N/A	N/A	(B)	None	None		None
U-301-B	N/A	N/A	N/A	(B)	None	None		None
UX-302-A	N/A	N/A	N/A	(B)	None	None		None
S-141	N/A	N/A	N/A	(B)	O/S	None	None	None
S-142	N/A	N/A	N/A	(B)	O/S	None	None	None
Totals:	19	9	N/C: 0		N/C: 0	N/C: 0	N/C: 0	N/C: 0
149 tanks	Hydrogen Watch List Tanks	High Heat Tanks (non-Watch List)						

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS -149 TANKS
(Sheet 5 of 6)

Footnotes:

1. All SSTs have either manual tape, FIC, or ENRAF surface level measuring devices. Some also have zip cords.

ENRAF gauges are being installed to replace FICs (or sometimes manual tapes). The ENRAF gauges are being connected to TMACS, but many are currently being read manually from the field. See Table D-6 for list of ENRAF installations.

2. High heat tanks have active exhausters; psychrometrics can be taken in the high heat tanks. Psychrometric readings are taken on an "as needed" basis with the exception of tanks C-105 and C-106. Document OSD-T-151-00013 requires psychrometric readings to be taken in C-105 and C-106 on a monthly frequency when the ventilation system is running. Psychrometric readings were not taken in C-105/106 in May 2000. Discrepancy Report 00-880 was issued August 3, 2000, stating a work package was not prepared due to an oversight during personnel transition. Notification to DOE-RL to discontinue psychrometric data collection in C-105/C-106 was submitted in July 1998; this was not responded to by DOE; therefore the discontinuance of psychrometrics was not incorporated into OSD-T-151-00013. Since the issuance of the Discrepancy Report, an additional request has been made to DOE; as soon as a response is received, the requirement to take psychrometrics will be deleted from the OSD. The Environmental Protection Agency does not require that psychrometrics be taken.

Psychrometric readings previously taken monthly in SX-farm will now be taken annually.

3. Tank C-106 was removed from the High Heat Load Watch List on December 16, 1999.
4. Temperature readings may be regulated by OSD, POP, or FSAR (FSAR only regulates high heat load tanks). Temperatures cannot be obtained in 13 low heat load tanks (see Table D-2). The OSD does not require readings or repair of out-of-service thermocouples for the low heat load ($\leq 26,000$ Btu/h) tanks. However, the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks.

Temperatures in some tanks cannot be taken in the waste because the waste level is lower than the lowest thermocouple in these tanks.

Temperatures for many tanks are monitored continuously by TMACS; see Table D-7, TMACS Monitoring Status.

5. Document OSD-T-151-00031, "Operating Specifications for Tank Farm Leak Detection," REV C-0, January 13, 1999, requires that single-shell tanks with the surface level measurement device contacting liquid, partial liquid, or floating crust surface, will be monitored for leak detection on a daily basis. Tanks with a solid surface will be monitored for leak detection on a weekly basis by taking neutron scan data from a Liquid Observation Well (LOW), if an LOW is present. Tanks with a solid surface but without LOWs will not be monitored for leak detection if the tank has been interim stabilized, until an LOW is installed. The OSD specifies what leak detection methods are to be used for each tank, and the requirements if the readings are not taken on the required frequency or if equipment is out of service.

This OSD revision does not require drywell surveys to be taken: drywell scans will only be taken under extreme conditions; any scans would have to be subcontracted, as the contractor no longer has vans.

6. Leak detection for the catch tanks is performed by monitoring for the buildup of liquid in the secondary containment (for most tanks with secondary containment) or for decrease in the liquid level for those tanks without secondary containment or secondary containment monitoring.

TABLE D-4. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 149 TANKS
(Sheet 6 of 6)

Catch tank 240-S-302 is monitored for intrusions only, and is not subject to leak detection monitoring requirements until liquid is present above the intrusion level.

Weight Factor is the surface level measuring device currently used in A-417, A-350, 244-A Tank/Sump, and 244-S Tank/Sump. DCRT CR-003 is inactive and measured in gallons.

7. Document SD-WM-TI-605, REV. 0, dated January 1994, describes the rationale for Liquid Observation Well (LOW) installation priority. This priority is based on tank leak status, tank surface condition, and tank stabilization status. Also included is a listing of tanks with the waste level being below two feet, which have no priority assigned because no effort will be made to install LOWs in the near future. LOW probes are unable to accurately monitor interstitial liquid levels less than two feet high.

Tanks which will not receive LOWs:

A-102	BX-101	C-201	T-106
A-104	BX-103	C-202	T-108
A-105	BX-105	C-203	T-109
AX-102	BX-106	C-204	TX-107
AX-104	BX-108	SX-110	TY-102
B-102	C-108	SX-113	TY-104
B-103	C-109	SX-115	TY-106
B-112	C-111	T-102	U-101
		T-103	U-112

Total - 34 Tanks

8. Tank TX-105 - the LOW was in riser 8; the riser has been removed and the LOW has not been monitored since January 1987. Liquid levels are being taken in riser 9 by ENRAF and recorded in TMACS.
9. Tank AX-101 - LOW readings are taken by gamma sensors.
10. Tanks C-102 and C-103 were removed from the Organics Salts Watch List on August 23, 2000
11. Tank SX-105 - LOW scan not taken for week ending August 28, 2000. LOW is primary leak detection device; ENRAF is backup and monitored daily in TMACS. LOW has failed structurally, and will be replaced. Work Package W2-00-01151W - approximate deadline date: December 26, 2000.

TABLE D-5. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS

28 TANKS (Sheet 1 of 2)

September 30, 2000

The following table indicates whether Double-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month.

NOTE:

Dome Elevation Surveys are not required for DSTs.

Psychrometrics and in-tank photos/videos are taken "as needed" (2)

LEGEND:

(Shaded)	= In compliance with all applicable documentation
N/C	= Noncompliance with applicable documentation
FIC/ENRAF	= Surface level measurement devices
M.T.	
OSD	= OSD-T-151-0007, OSD-T-151-00031
None	= no M.T., FIC or ENRAF installed
O/S	= Out of Service
W.F.	= Weight Factor
N/A	= Not Applicable (not monitored or no monitoring schedule)
Rad.	= Radiation

Tank Number	Watch List	Temperature Readings (3) (OSD)	Surface Level Readings (1) (OSD)			Radiation Readings		Annulus (OSD)
						Leak Detection Pits (4) (OSD)		
			M.T.	FIC	ENRAF	W.F.	Rad. (6)	
AN-101				None			N/A	
AN-102				None			N/A	
AN-103	X			None			N/A	
AN-104	X		O/S	None			N/A	
AN-105	X		O/S	None			N/A	
AN-106				None			N/A	
AN-107				None		O/S	N/A	
AP-101			O/S	None		O/S (7)	N/A	O/S
AP-102				None		O/S (7)	N/A	
AP-103				None		O/S (7)	N/A	
AP-104			O/S	None		O/S (7)	N/A	
AP-105				None		O/S (7)	N/A	O/S
AP-106				None		O/S (7)	N/A	
AP-107				None		O/S (7)	N/A	
AP-108				None		O/S (7)	N/A	
AW-101	X		O/S	None			N/A	
AW-102					(5)		N/A	O/S
AW-103				None			N/A	
AW-104				None			N/A	O/S
AW-105				None			N/A	
AW-106				None			N/A	
AY-101				None		O/S	N/A	O/S
AY-102				None			N/A	
AZ-101				None			N/A	O/S
AZ-102					None		N/A	O/S
SY-101	X		None	None		O/S	N/A	
SY-102			O/S (8)	None			N/A	
SY-103	X		O/S (8)	None		O/S	N/A	
Totals: 28 tanks	6 Watch List Tanks	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0

TABLE D-5. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 28 TANKS
(Sheet 2 of 2)

Footnotes:

1. Some double-shell tanks have both FIC and manual tape which is used when the FIC is out of service. Noncompliance (N/C) will be shown when no readings are obtained. ENRAF gauges are being installed to replace FICs. The ENRAF gauges are being connected to TMACS, but some are currently being read manually.
2. Psychrometric readings are taken on an "as needed" basis. No psychrometric readings are currently being taken in the double-shell tanks.
3. OSD specifies double-shell tank temperature limits, gradients, etc.
4. Applicable OSD and HNF-IP-0842, latest revisions, are used as guidelines for monitoring Leak Detection Pits. See also (6) and (7) below.
5. AW-102 has ENRAF, FIC and M.T. At some point the FIC will be removed.
6. USQ TF-97-0038, dated April 28, 1997, specifies discontinuing the use of leak detection pit radiation monitoring equipment in all double-shell tank farms where the leak detection pits are used as tertiary leak detection. This applies to all double-shell tank farms.
7. Leak Detection Pit weekly readings are being obtained by Instrument Technicians in these tanks:
AP-103C (for tanks AP-101 - 104)
AP-105C (for tanks AP-105 - 108)
8. SY-103 - Manual Tape has sporadic readings. ENRAF is primary device.
SY-102 - Manual Tape has sporadic readings. The plummet fell off the M.T. - a work request was written July 31, 2000. ENRAF is primary device.

**TABLE D-6. ENRAF SURFACE LEVEL GAUGE INSTALLATION AND
DATA INPUT METHODS**
September 30, 2000

LEGEND												
SACS			= Surveillance Analysis Computer System									
TMACS			= Tank Monitor and Control System									
Auto			= Automatically entered into TMACS and electronically transmitted to SACS									
Manual			= Manually entered directly into SACS by surveillance personnel, from Field Data sheets									
EAST AREA						WEST AREA						
Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method	
A-101	09/95	Auto	B-201	07/00	Auto	S-101	02/95	Auto	TX-101	11/95	Auto	
A-102			B-202	07/00	Auto	S-102	05/95	Auto	TX-102	05/96	Auto	
A-103	07/96	Auto	B-203	06/00	Auto	S-103	05/94	Auto	TX-103	12/95	Auto	
A-104	05/96	Manual	B-204	06/00	Auto	S-104	05/99	Auto	TX-104	03/96	Auto	
A-105			BX-101	04/96	Auto	S-105	07/95	Auto	TX-105	04/96	Auto	
A-106	01/96	Auto	BX-102	06/96	Auto	S-106	06/94	Auto	TX-106	04/96	Auto	
AN-101	08/96	Auto	BX-103	04/96	Auto	S-107	06/94	Auto	TX-107	04/96	Auto	
AN-102	05/00	Auto	BX-104	05/96	Auto	S-108	07/95	Auto	TX-108	04/96	Auto	
AN-103	08/95	Auto	BX-105	03/96	Auto	S-109	08/95	Auto	TX-109	11/95	Auto	
AN-104	08/95	Auto	BX-106	07/94	Auto	S-110	08/95	Auto	TX-110	05/96	Auto	
AN-105	06/95	Auto	BX-107	06/96	Auto	S-111	08/94	Auto	TX-111	05/96	Auto	
AN-106	05/00	Auto	BX-108	05/96	Auto	S-112	05/95	Auto	TX-112	05/96	Auto	
AN-107	04/00	Auto	BX-109	08/95	Auto	SX-101	04/95	Auto	TX-113	05/96	Auto	
AP-101	06/99	Auto	BX-110	06/96	Auto	SX-102	04/95	Auto	TX-114	05/96	Auto	
AP-102	06/99	Auto	BX-111	05/96	Auto	SX-103	04/95	Auto	TX-115	05/96	Auto	
AP-103	06/99	Auto	BX-112	03/96	Auto	SX-104	05/95	Auto	TX-116	05/96	Auto	
AP-104	07/99	Auto	BY-101			SX-105	05/95	Auto	TX-117	06/96	Auto	
AP-105	08/99	Auto	BY-102	09/99	Auto	SX-106	08/94	Auto	TX-118	03/96	Auto	
AP-106	06/99	Auto	BY-103	12/96	Auto	SX-107	09/99	Auto	TY-101	07/95	Auto	
AP-107	08/99	Auto	BY-104			SX-108	09/99	Auto	TY-102	09/95	Auto	
AP-108	08/99	Auto	BY-105			SX-109	09/98	Auto	TY-103	09/95	Auto	
AW-101	06/95	Auto	BY-106			SX-110	09/99	Auto	TY-104	06/95	Auto	
AW-102	05/96	Auto	BY-107			SX-111	09/99	Auto	TY-105	12/95	Auto	
AW-103	05/96	Auto	BY-108			SX-112	09/99	Auto	TY-106	12/95	Auto	
AW-104	01/96	Auto	BY-109			SX-113	09/99	Auto	U-101			
AW-105	06/96	Auto	BY-110	02/97	Manual	SX-114	09/99	Auto	U-102	01/96	Manual	
AW-106	06/96	Auto	BY-111	02/99	Manual	SX-115	09/99	Manual	U-103	07/94	Auto	
AX-101	09/95	Auto	BY-112			SY-101	07/94	Auto	U-104			
AX-102	08/98	Auto	C-101			SY-102	06/94	Auto	U-105	07/94	Auto	
AX-103	09/95	Auto	C-102			SY-103	07/94	Auto	U-106	08/94	Auto	
AX-104	10/96	Auto	C-103	08/94	Auto	T-101	05/95	Manual	U-107	08/94	Auto	
AY-101	03/96	Auto	C-104	04/99	Manual	T-102	06/94	Auto	U-108	05/95	Auto	
AY-102	01/98	Auto	C-105	05/96	Manual	T-103	07/95	Manual	U-109	07/94	Auto	
AZ-101	08/96	Manual	C-106	02/96	Auto	T-104	12/95	Manual	U-110	01/96	Manual	
AZ-102			C-107	04/95	Auto	T-105	07/95	Manual	U-111	01/96	Manual	
B-101	07/00	Auto	C-108			T-106	07/95	Manual	U-112			
B-102	02/95	Auto	C-109			T-107	06/94	Auto	U-201			
B-103	07/00	Auto	C-110			T-108	10/95	Manual	U-202			
B-104	06/00	Auto	C-111			T-109	09/94	Manual	U-203	09/98	Manual	
B-105	08/00	Auto	C-112	03/96	Manual	T-110	05/95	Auto	U-204	06/98	Manual	
B-106	07/00	Auto	C-201			T-111	07/95	Manual				
B-107	06/00	Auto	C-202			T-112	09/95	Manual				
B-108	07/00	Auto	C-203			T-201						
B-109	08/00	Auto	C-204			T-202						
B-110	07/00	Auto				T-203						
B-111	07/00	Auto				T-204						
B-112	03/95	Auto										
Total East Area: 70						Total West Area: 77						

147 ENRAFs installed: 125 automatically entered into TMACS, 22 manually entered into SACS

TABLE D-7. TANK MONITOR AND CONTROL SYSTEM (TMACS)

September 30, 2000

Note: Indicated below are the number of tanks having at least one operating sensor monitored by TMACS.

Some tanks have more than one sensor: multiple sensors of the same type in a tank are not shown in the table (for example: 10 tanks in BY-Farm have at least one operating TC sensor and 3 tanks in BY-Farm have at least one operating RTD sensor).

Acceptance Testing Completed: Sensors Automatically Monitored by TMACS

EAST AREA	Temperatures		ENRAF Level Gauge	Pressure (b)	Hydrogen (c)	Gas Sample Flow
	Thermocouple Tree (TC)	Resistance Thermal Device (RTD)				
Tank Farm						
A-Farm (6 Tanks)	1		3		1	1
AN-Farm (7 Tanks)	7		7	7	3	3
AP-Farm (8 Tanks)			8			
AW-Farm (6 Tanks)	6		6		1	1
AX-Farm (4 Tanks)	3		4		1	
AY-Farm (2 Tanks)			2			
AZ-Farm (2 Tanks)						
B-Farm (16 Tanks)	1		16			
BX-Farm (12 Tanks)	11		12			
BY-Farm (12 Tanks)	10	3	2			
C-Farm (16 Tanks)	15 (f)	1	3	1		
TOTAL EAST AREA (91 Tanks)	54	4	63	8	6	5
WEST AREA						
S-Farm (12 Tanks)	12		12	1	3	1 (e)
SX-Farm (15 Tanks)	14		14	1	7	5 (e)
SY-Farm (3 Tanks) (a)	3		3	1	2	2
T-Farm (16 Tanks)	14	1	3 (d)		1	(e)
TX-Farm (18 Tanks)	13		18			
TY-Farm (6 Tanks)	6	3	6			
U-Farm (16 Tanks)	15		6	4	6	6
TOTAL WEST AREA (86 Tanks)	77	4	62	7	19	19
TOTALS (177 Tanks)	131	8	125	15	25	24

(a) Tank SY-101 has 2 gas sample flow sensors plus 2 vent flow sensors, and 2 ENRAFs.

(b) Each tank has two sensors (high and low range).

(c) Each tank has two sensors (high and low range).

(d) T-107 - Auto ENRAF O/S, manual readings taken daily

(e) S, SX, and T-Farms - five gas sample flow sensors have been unhooked or removed. Will eventually use SHMS equipment on other tanks but none scheduled yet.

(f) C-105 acromag needs replacing. Manual readings are taken weekly.

APPENDIX E

**MISCELLANEOUS UNDERGROUND STORAGE TANKS
AND SPECIAL SURVEILLANCE FACILITIES**

**TABLE E-1. EAST AND WEST AREA MISCELLANEOUS UNDERGROUND STORAGE TANKS
AND SPECIAL SURVEILLANCE FACILITIES**

ACTIVE - still running transfers through the associated diversion boxes or pipeline encasements

September 30, 2000

<u>FACILITY</u>	<u>LOCATION</u>	<u>PURPOSE (receives waste from:)</u>	<u>(Gallons)</u>	<u>MONITORED BY</u>	<u>REMARKS</u>
EAST AREA					
241-A-302-A	A Farm	A-151 DB	681	SACS/ENRAF/Manually	Pumped to AW-105 7/00
241-ER-311	B Plant	ER-151, ER-152 DB	8272	SACS/ENRAF/Manually	
241-AX-152	AX Farm	AX-152 DB	748	SACS/MT	August 2000 water added to perform integrity test
241-AZ-151	AZ Farm	AZ-702 condensate	2786	SACS/ENRAF/TMACS	Volume changes daily - pumped to AZ-102 as needed
241-AZ-154	AZ Farm		25	SACS/MT	
244-BX-TK/SMP	BX Complex	DCRT - Receives from several farms	17842	SACS/MT	Using Manual Tape for tank/sump, pumped 10/16/99 to 66.0 in.
244-A-TK/SMP	A Complex	DCRT - Receives from several farms	6245	MCS/SACS/WTF	WTF- pumped 3/99 to AP-108
A-350	A Farm	Collects drainage	299	MCS/SACS/WTF	WTF (uncorrected) pumped as needed
AR-204	AY Farm	Tanker trucks from various facilities	500 (*)	DIP TUBE	Alarms on SACS-pumped to AP-108, 7/00
A-417	A Farm		11757	SACS/WTF	WTF (uncorrected) pumped 4/98
CR-003-TK/SUMP	C Farm	DCRT	3175	MT/ZIP CORD	Zip cord in sump O/S 3/11/96, water intrusion, 1/98
WEST AREA					
241-TX-302-C	TX Farm	TX-154 DB	163	SACS/ENRAF/Manually	
241-U-301-B	U Farm	U-151, U-152, U-153, U-252 DB	8067	SACS/ENRAF/Manually	Returned to service 12/30/93
241-UX-302-A	U Plant	UX-154 DB	2812	SACS/ENRAF/Manually	
241-S-304	S Farm	S-151 DB	130	SACS/ENRAF/Manually	Replaced S-302-A, 10/91; ENRAF installed 7/98
244-S-TK/SMP	S Farm	From original tanks to SY-102	12317	SACS/Manually	Sump not alarming.
244-TX-TK/SMP	TX Farm	From original tanks to SY-102	18594	SACS/Manually	WTF (uncorrected)
Vent Station Catch Tank		Cross Country Transfer Line	351	SACS/Manually	MT

Total Active Facilities	18
--------------------------------	-----------

(*) AR-204 was pumped down to 150 gal then valve was left on and 350 gal of water went back into tank.

LEGEND:

- DB - Diversion Box
- DCRT - Double-Contained Receiver Tank
- TK - Tank
- SMP - Sump
- FIG - Food Instrument Corporation measurement device
- MT - Manual Tape
- Zip Cord - surface level measurement device
- WTF - Weight Time Factor - can be recorded as WTF, CWF (corrected), and Uncorrected WTF
- SACS - Surveillance Automated Control System
- MCS - Monitor and Control System
- Manually - Not connected to any automated system
- O/S - Out of Service
- ENRAF - Surface Level Measuring Device

HNF-EP-0182-150

TABLE E-2. EAST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

September 30, 2000

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	MONITORED	
				BY	REMARKS
216-BY-201	BY Farm	TBP Waste Line	Unknown	NM	(216-BY)
241-A-302-B	A Farm	A-152 DB	5759	SACS/MT	Isolated 1985, Project B-138 Interim Stabilized 1990, Rain intrusion
241-AX-151	N of PUREX	PUREX	Unknown	NM	Isolated 1985
241-B-301-B	B Farm	B-151, B-152, B-153, B-252 DB	22250	NM	Isolated 1985 (1)
241-B-302-B	B Farm	B-154 DB	4930	NM	Isolated 1985 (1)
241-BX-302-A	BX Farm	BR-152, BX-153, BXR-152, BYR-152 DB	840	NM	Isolated 1985 (1)
241-BX-302-B	BX Farm	BX-154 DB	1040	NM	Isolated 1985 (1)
241-BX-302-C	BX Farm	BX-155 DB	870	NM	Isolated 1985 (1)
241-C-301-C	C Farm	C-151, C-152, C-153, C-252 DB	10470	NM	Isolated 1985 (1)
241-CX-70	Hot Semi-	Transfer lines	Unknown	NM	Isolated, Decommission Project,
241-CX-72	Works	Transfer lines	650	NM	See Dwg H-2-95-501, 2/5/87
241-ER-311A	SW B Plant	ER-151 DB	Unknown	NM	Isolated
244-AR VAULT	A Complex	Between farms & B-Plant	Unknown	NM	Not actively being used. Systems activated for final clean-out.
244-BXR-TK/SMP-001	BX Farm	Transfer lines	7200	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-002	BX Farm	Transfer lines	2180	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-003	BX Farm	Transfer lines	1810	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-011	BX Farm	Transfer lines	7100	NM	Interim Stabilization 1985 (1)
361-B-TANK	B Plant	Drainage from B-Plant	Unknown	NM	Interim Stabilization 1985 (1)

Total East Area inactive facilities 18

LEGEND: DB - Diversion Box
DCRT - Double-Contained Receiver Tank
MT - Manual Tap
SACS - Surveillance Automated Control System
TK - Tank
SMP - Sump
R - Usually denotes replacement
NM - Not Monitored

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

HNF-EP-0182-150

TABLE E-3. WEST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

September 30, 2000

<u>FACILITY</u>	<u>LOCATION</u>	<u>RECEIVED WASTE FROM:</u>	<u>(Gallons)</u>	<u>MONITORED</u>	
				<u>BY</u>	<u>REMARKS</u>
216-TY-201	E. of TY Farm	Supernate from T-112	Unknown	NM	Isolated
231-W-151-001	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
231-W-151-002	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
240-S-302	S Farm	240-S-151 DB	8414	SACS/ENRAF	Assumed Leaker EPDA 85-04
241-S-302-A	S Farm	241-S-151 DB	0		Assumed Leaker TF-EFS-90-042
Partially filled with grout 2/91, determined still assumed leaker after leak test. Manual FIC readings are unobtainable due to dry grouted surface.					
CASS monitoring system retired 2/23/99; intrusion readings discontinued. S-304 replaced S-302-A					
241-S-302-B	S Farm	S Encasements	Unknown	NM	Isolated 1985 (1)
241-SX-302	SX Farm	SX-151 DB, 151 TB	Unknown	NM	Isolated 1987
241-SX-304	SX Farm	SX-152 Transfer Box, SX-151 DB	Unknown	NM	Isolated 1985 (1)
241-T-301	T Farm	DB T-151, -151, -153, -252	Unknown	NM	Isolated 1985 (241-T-301B)
241-TX-302	TX Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TX-302-X-B	TX Farm	TX Encasements	Unknown	NM	Isolated 1985 (1)
241-TX-302-B	TX Farm	TX-155 DB	1800	SACS/MT	New MT installed 7/16/93
241-TX-302-B(R)	E. of TX Farm	TX-155 DB	Unknown	NM	Isolated
241-TY-302-A	TY Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TY-302-B	TY Farm	TY Encasements	Unknown	NM	Isolated 1985 (1)
241-Z-8	E. of Z Plant	Recuplex waste	Unknown	NM	Isolated, 1974, 1975
242-T-135	T Evaporator	T Evaporator	Unknown	NM	Isolated
242-TA-R1	T Evaporator	Z Plant waste	Unknown	NM	Isolated
243-S-TK-1	N. of S Farm	Pers. Decon. Facility	Unknown	NM	Isolated
244-U-TK/SMP	U Farm	DCRT - Receives from several farms	Unknown	NM	Not yet in use
244-TXR VAULT	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-001	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-002	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-003	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
270-W	SE of U Plant	Condensate from U-221	Unknown	NM	Isolated 1970
361-T-TANK	T Plant	Drainage from T-Plant	Unknown	NM	Isolated 1985 (1)
361-U-TANK	U Plant	Drainage from U-Plant	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
Total West Area inactive facilities			27		

LEGEND:

- DB - Diversion Box, TB - Transfer Box
- DCRT - Double-Contained Receiver Tank
- TK - Tank
- SMP - Sump
- R - Usually denotes replacement
- FIC - Surface Level Monitoring Device
- MT - Manual Tape
- O/S - Out of Service
- SACS - Surveillance Automated Control System
- NM - Not Monitored
- ENRAF - Surface Level Monitoring Device

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

HNF-EP-0182-150

APPENDIX F
LEAK VOLUME ESTIMATES

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (Sheet 1 of 5)

September 30, 2000

Tank Number	Date Declared Confirmed or Assumed Leaker (3)	Volume Gallons (2)	Associated KiloCuries 137 cs (10)	Interim Stabilized Date (11)	Leak Estimate	
					Updated	Reference
241-A-103	1987	5500 (8)		06/88	1987	(j)
241-A-104	1975	500 to 2500	0.8 to 1.8 (q)	08/78	1983	(a)(q)
241-A-105 (1)	1963	10000 to 277000	85 to 760 (b)	07/79	1991	(b)(c)
241-AX-102	1988	3000 (8)		09/88	1989	(h)
241-AX-104	1977	-- (6)		08/81	1989	(g)
241-B-101	1974	-- (6)		03/81	1989	(g)
241-B-103	1978	-- (6)		02/85	1989	(g)
241-B-105	1978	-- (6)		12/84	1989	(g)
241-B-107	1980	8000 (8)		03/85	1986	(d)(f)
241-B-110	1981	10000 (8)		03/85	1986	(d)
241-B-111	1978	-- (6)		06/85	1989	(g)
241-B-112	1978	2000		05/85	1989	(g)
241-B-201	1980	1200 (8)		08/81	1984	(e)(f)
241-B-203	1983	300 (8)		06/84	1986	(d)
241-B-204	1984	400 (8)		06/84	1989	(g)
241-BX-101	1972	-- (6)		09/78	1989	(g)
241-BX-102	1971	70000	50 (i)	11/78	1986	(d)
241-BX-108	1974	2500	0.5 (i)	07/79	1986	(d)
241-BX-110	1976	-- (6)		08/85	1989	(g)
241-BX-111	1984 (13)	-- (6)		03/95	1993	(g)
241-BY-103	1973	<5000		11/97	1983	(a)
241-BY-105	1984	-- (6)		N/A	1989	(g)
241-BY-106	1984	-- (6)		N/A	1989	(g)
241-BY-107	1984	15100 (8)		07/79	1989	(g)
241-BY-108	1972	<5000		02/85	1983	(a)
241-C-101	1980	20000 (8)(10)		11/83	1986	(d)
241-C-110	1984	2000		05/95	1989	(g)
241-C-111	1988	5500 (8)		03/84	1989	(g)
241-C-201 (4)	1988	550		03/82	1987	(i)
241-C-202 (4)	1988	450		08/81	1987	(i)
241-C-203	1984	400 (8)		03/82	1986	(d)
241-C-204 (4)	1988	350		09/82	1987	(i)
241-S-104	1988	24000 (8)		12/84	1989	(g)
241-SX-104	1988	6000 (8)		04/00	1988	(k)
241-SX-107	1984	<5000		10/79	1983	(a)
241-SX-108 (5)(14)	1982	2400 to 35000	17 to 140 (m)(q)(t)	08/79	1991	(m)(q)(t)
241-SX-109 (5)(14)	1985	<10000	<40 (n)(t)	05/81	1992	(n)(t)
241-SX-110	1976	5500 (8)		08/79	1989	(g)
241-SX-111 (14)	1974	500 to 2000	0.6 to 2.4 (i)(q)(t)	07/79	1986	(d)(q)(t)
241-SX-112 (14)	1989	30000	40 (i)(t)	07/79	1986	(d)(t)
241-SX-113	1982	15000	8 (i)	11/78	1986	(d)
241-SX-114	1972	-- (6)		07/79	1989	(g)
241-SX-115	1985	50000	21 (o)	09/78	1992	(o)
241-T-101	1992	7500 (8)		04/93	1992	(p)
241-T-103	1974	<1000 (8)		11/83	1989	(g)
241-T-106	1973	115000 (8)	40 (i)	08/81	1986	(d)
241-T-107	1984	-- (6)		05/96	1989	(g)
241-T-108	1974	<1000 (8)		11/78	1980	(f)
241-T-109	1974	<1000 (8)		12/84	1989	(g)
241-T-111	1979, 1994 (12)	<1000 (8)		02/95	1994	(f)(r)
241-TX-105	1977	-- (6)		04/83	1989	(g)
241-TX-107 (5)	1984	2500		10/79	1986	(d)
241-TX-110	1977	-- (6)		04/83	1989	(g)
241-TX-113	1974	-- (6)		04/83	1989	(g)
241-TX-114	1974	-- (6)		04/83	1989	(g)
241-TX-115	1977	-- (6)		09/83	1989	(g)
241-TX-116	1977	-- (6)		04/83	1989	(g)
241-TX-117	1977	-- (6)		03/83	1989	(g)
241-TY-101	1973	<1000 (8)		04/83	1980	(f)
241-TY-103	1973	3000	0.7 (i)	02/83	1986	(d)
241-TY-104	1981	1400 (8)		11/83	1986	(d)
241-TY-105	1980	35000	4 (i)	02/83	1986	(d)
241-TY-106	1959	20000	2 (i)	11/78	1986	(d)
241-U-101	1959	30000	20 (i)	09/79	1986	(d)
241-U-104	1961	55000	0.09 (i)	10/78	1986	(d)
241-U-110	1975	5000 to 8100 (8)	0.05 (q)	12/84	1986	(d)(q)
241-U-112	1980	8500 (8)		09/79	1986	(d)
87 Tanks		<750,000 - 1,050,000 (7)				

N/A = not applicable (not yet interim stabilized)

TABLE F-1. SINGLE-SHELL LEAK VOLUME ESTIMATES
(Sheet 2 of 5)

Footnotes:

- (1) Current estimates [see reference(b)] are that 610 Kgallons of cooling water was added to Tank 241-A-105 from November 1970 to December 1978 to aid in evaporative cooling. In accordance with Dangerous Waste Regulations [Washington Administrative Code 173-303-070 (2)(a)(ii), as amended, Washington State Department of Ecology, 1990, Olympia, Washington], any of this cooling water that has been added and subsequently leaked from the tank must be classified as a waste and should be included in the total leak volume. In August 1991, the leak volume estimate for this tank was updated in accordance with the WAC regulations. Previous estimates excluded the cooling water leaks from the total leak volume estimates because the waste content (concentration) in the cooling water which leaked should be much less than the original liquid waste in the tank (the sludge is relatively insoluble). The total leak volume estimate in this report (10 Kgallons to 277 Kgallons) is based on the following (see References):

1. Reference (b) contains an estimate of 5 Kgallons to 15 Kgallons for the initial leak prior to August 1968.
2. Reference (b) contains an estimate of 5 Kgallons to 30 Kgallons for the leak while the tank was being sluiced from August 1968 to November 1970.
3. Reference (b) contains an estimate of 610 Kgallons of cooling water added to the tank from November 1970 to December 1978 but it was estimated that the leakage was small during this period. This reference contains the statement "Sufficient heat was generated in the tank to evaporate most, and perhaps nearly all, of this water." This results in a low estimate of zero gallons leakage from November 1970 to December 1978.
4. Reference (c) contains an estimate the 378 to 410 Kgallons evaporated out of the tank from November 1970 to December 1978. Subtracting the minimum evaporation estimate from the cooling water added estimate provides a range from 0 to 232 Kgallons of cooling water leakage from November 1970 to December 1978.

	<u>Low Estimate</u>	<u>High Estimate</u>
Prior to August 1968	5,000	15,000
August 1968 to November 1970	5,000	30,000
November 1970 to December 1978	0	232,000
Totals	10,000	277,000

- (2) These leak volume estimates do not include (with some exceptions), such things as: (a) cooling/raw water leaks, (b) intrusions (rain infiltration) and subsequent leaks, (c) leaks inside the tank farm but not through the tank liner (surface leaks, pipeline leaks, leaks at the joint for the overflow or fill lines, etc.), and (d) leaks from catch tanks, diversion boxes, encasements, etc.
- (3) In many cases, a leak was suspected long before it was identified or confirmed. For example, reference (d) shows that Tank 241-U-104 was suspected of leaking in 1956. The leak was "confirmed" in 1961. This report lists the "assumed leaker" date of 1961. Using present standards, Tank 241-U-104 would have been declared an assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," "borderline" and "dormant," were merged into one category now reported as "assumed leaker." See reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES

(Sheet 3 of 5)

- (4) The leak volume estimate date for these tanks is before the "declared leaker" date because the tank was in a "suspected leaker" or "questionable integrity" status; however, a leak volume had been estimated prior to the tank being reclassified.
- (5) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicating continuing leak or movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations.
- (6) Methods were used to estimate the leak volumes from these 19 tanks based on the assumption that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (9). For more details see reference (g). The total leak volume estimate for these tanks is 150 Kgallons (rounded to the nearest Kgallons), for an average of approximately 8 Kgallons for each of 19 tanks.
- (7) The total has been rounded to the nearest 50 Kgallons. Upper bound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.
- (8) Leak volume estimate is based solely on observed liquid level decreases in these tanks. This is considered to be the most accurate method for estimating leak volumes.
- (9) The curie content shown is as listed in the reference document and is not decayed to a consistent date; therefore, a cumulative total is inappropriate.
- (10) Tank 241-C-101 experienced a liquid level decrease in the late 1960s and was taken out of service and pumped to a "minimum heel" in December 1969. In 1970, the tank was classified as a "questionable integrity" tank. Liquid level data show decreases in level throughout the 1970s and the tank was saltwell pumped during the 1970s, ending in April 1979. The tank was reclassified as a "confirmed leaker" in January 1980. See references (q) and (r); refer to reference (s) for information on the potential for there to have been leaks from other C-farm tanks (specifically, C-102, C-103, and C-109).
- (11) These dates indicate when the tanks were declared to be interim stabilized. In some cases, the official interim stabilization documents were issued at a later date. Also, in some cases, the field work associated with interim stabilization was completed at an earlier date.
- (12) Tank T-111 was declared an assumed re-leaker on February 28, 1994, due to a decreasing trend in surface level measurement. This tank was pumped, and interim stabilization completed on February 22, 1995.
- (13) Tank BX-111 was declared an assumed re-leaker in April 1993. Preparations for pumping were delayed, following an administrative hold placed on all tank farm operations in August 1993. Pumping resumed and the tank was declared interim stabilized on March 15, 1995.
- (14) The leak volume and curie release estimates on SX-108, SX-109, SX-111, and SX-112 have been re-evaluated using a Historical Leak Model [see reference (t)]. In general, the model estimates are much higher than the values listed in the table, both for volume and curies released. The values listed in the table do not reflect this revised estimate because, "In particular, it is worth emphasizing that this report was never meant to be a definitive update for the leak baseline at the Hanford Site. It was rather meant to be an attempt to view the issue of leak inventories with a new and different methodology." (This quote is from the first page of the referenced report).

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 4 of 5)

References:

- (a) Murthy, K.S., et al, June 1983, *Assessment of Single-Shell Tank Residual Liquid Issues at Hanford Site*, Washington, PNL-4688, Pacific Northwest Laboratory, Richland, Washington.
- (b) WHC, 1991a, *Tank 241-A-105 Leak Assessment*, WHC-MR-0264, Westinghouse Hanford Company, Richland, Washington.
- (c) WHC, 1991b, *Tank 241-A-105 Evaporation Estimate 1970 Through 1978*, WHC-EP-0410, Westinghouse Hanford Company, Richland, Washington.
- (d) Smith, D. A., January 1986, *Single-Shell Tank Isolation Safety Analysis Report*, SD-WM-SAR-006, Rev. 1, Westinghouse Hanford Company, Richland, Washington.
- (e) McCann, D. C., and T. S. Vail, September 1984, *Waste Status Summary*, RHO-RE-SR-14, Rockwell Hanford Operations, Richland, Washington.
- (f) Catlin, R. J., March 1980, *Assessment of the Surveillance Program of the High-Level Waste Storage Tanks at Hanford*, Hanford Engineering Development Laboratory, Richland, Washington.
- (g) Baumhardt, R. J., May 15, 1989, Letter to R. E. Gerton, U.S. Department of Energy-Richland Operations Office, *Single-Shell Tank Leak Volumes*, 8901832B R1, Westinghouse Hanford Company, Richland, Washington.
- (h) WHC, 1990a, Occurrence Report, *Surface Level Measurement Decrease in Single-Shell Tank 241-AX-102*, WHC-UO-89-023-TF-05, Westinghouse Hanford Company, Richland, Washington.
- (i) Groth, D. R., July 1, 1987, Internal Memorandum to R. J. Baumhardt, *Liquid Level Losses in Tanks 241-C-201, -202 and -204*, 65950-87-517, Westinghouse Hanford Company, Richland, Washington.
- (j) Groth, D. R. and G. C. Owens, May 15, 1987, Internal Memorandum to J. H. Roecker, *Tank 103-A Integrity Evaluation*, Westinghouse Hanford Company, Richland, Washington.
- (k) Dunford, G. L., July 8, 1988, Internal Memorandum to R. K. Welty, *Engineering Investigation: Interstitial Liquid Level Decrease in Tank 241-SX-104*, 13331-88-416, Westinghouse Hanford Company, Richland, Washington.
- (l) ERDA, 1975, *Final Environmental Statement Waste Management Operations, Hanford Reservation, Richland, Washington*, ERDA-1538, 2 vols., U.S. Energy Research and Development Administration, Washington, D.C.
- (m) WHC, 1992a, *Tank 241-SX-108 Leak Assessment*, WHC-MR-0300, Westinghouse Hanford Company, Richland, Washington.
- (n) WHC, 1992b, *Tank 241-SX-109 Leak Assessment*, WHC-MR-0301, Westinghouse Hanford Company, Richland, Washington.
- (o) WHC, 1992c, *Tank 241-SX-115 Leak Assessment*, WHC-MR-0302, Westinghouse Hanford Company, Richland, Washington.

TABLE F-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 5 of 5)

- (p) WHC, 1992d, Occurrence Report, *Apparent Decrease in Liquid Level in Single Shell Underground Storage Tank 241-T-101, Leak Suspected; Investigation Continuing*, RL-WHC-TANKFARM-1992-0073, Westinghouse Hanford Company, Richland, Washington.
- (q) WHC, 1990b, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.
- (r) WHC, 1993a, *Assessment of Unsaturated Zone Radionuclide Contamination Around Single-Shell Tanks 241-C-105 and 241-C-106*, WHC-SD-EN-TI-185, REV OA, Westinghouse Hanford Company, Richland, Washington.
- (s) WHC, 1994, Occurrence Report, *Apparent Liquid Level Decrease in Single Shell Underground Storage Tank 241-T-111; Declared an Assumed Re-Leaker*, RL-WHC-TANKFARM-1994-0009, Westinghouse Hanford Company, Richland, Washington.
- (t) HNF, 1998, Agnew, S. F. and R. A. Corbin, August 1998, *Analysis of SX Farm Leak Histories - Historical Leak Model*, (HLM), HNF-3233, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico

APPENDIX G

**SINGLE-SHELL TANKS INTERIM STABILIZATION, AND
CONTROLLED, CLEAN AND STABLE (CCS) STATUS**

TABLE G -1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (Sheet 1 of 3)

September 30, 2000

Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method
A-101	SOUND	N/A		C-101	ASMD LKR	11/83	AR	T-108	ASMD LKR	11/78	AR
A-102	SOUND	08/89	SN	C-102	SOUND	09/95	JET	T-109	ASMD LKR	12/84	AR
A-103	ASMD LKR	08/88	AR	C-103	SOUND	N/A		T-110	SOUND	01/00 (5)	JET
A-104	ASMD LKR	08/78	AR	C-104	SOUND	09/89	SN	T-111	ASMD LKR	02/95	JET
A-106	ASMD LKR	07/79	AR	C-106	SOUND	10/95	AR	T-112	SOUND	03/81	AR(2)(3)
A-108	SOUND	08/82	AR	C-108	SOUND	N/A		T-201	SOUND	04/81	AR (3)
AX-101	SOUND	N/A		C-107	SOUND	08/85	JET	T-202	SOUND	08/81	AR
AX-102	ASMD LKR	08/88	SN	C-108	SOUND	03/84	AR	T-203	SOUND	04/81	AR
AX-103	SOUND	08/87	AR	C-109	SOUND	11/83	AR	T-204	SOUND	08/81	AR
AX-104	ASMD LKR	08/81	AR	C-110	ASMD LKR	05/95	JET	TX-101	SOUND	02/84	AR
B-101	ASMD LKR	03/81	SN	C-111	ASMD LKR	03/84	SN	TX-102	SOUND	04/83	JET
B-102	SOUND	08/85	SN	C-112	SOUND	09/90	AR	TX-103	SOUND	08/83	JET
B-103	ASMD LKR	02/85	SN	C-201	ASMD LKR	03/82	AR	TX-104	SOUND	09/79	SN
B-104	SOUND	06/85	SN	C-202	ASMD LKR	08/81	AR	TX-106	ASMD LKR	04/83	JET
B-105	ASMD LKR	12/84	AR	C-203	ASMD LKR	03/82	AR	TX-108	SOUND	06/83	JET
B-106	SOUND	03/85	SN	C-204	ASMD LKR	09/82	AR	TX-107	ASMD LKR	10/79	AR
B-107	ASMD LKR	03/85	SN	S-101	SOUND	N/A		TX-108	SOUND	03/83	JET
B-108	SOUND	05/85	SN	S-102	SOUND	N/A		TX-109	SOUND	04/83	JET
B-109	SOUND	04/85	SN	S-103	SOUND	04/00	JET (6)	TX-110	ASMD LKR	04/83	JET
B-110	ASMD LKR	12/84	AR	S-104	ASMD LKR	12/84	AR	TX-111	SOUND	04/83	JET
B-111	ASMD LKR	06/85	SN	S-105	SOUND	09/88	JET	TX-112	SOUND	04/83	JET
B-112	ASMD LKR	06/85	SN	S-106	SOUND	N/A		TX-113	ASMD LKR	04/83	JET
B-201	ASMD LKR	08/81	AR (3)	S-107	SOUND	N/A		TX-114	ASMD LKR	04/83	JET
B-202	SOUND	06/85	AR(2)	S-108	SOUND	12/96	JET	TX-115	ASMD LKR	09/83	JET
B-203	ASMD LKR	06/84	AR	S-109	SOUND	N/A		TX-116	ASMD LKR	04/83	JET
B-204	ASMD LKR	06/84	AR	S-110	SOUND	01/97	JET	TX-117	ASMD LKR	03/83	JET
BX-101	ASMD LKR	08/78	AR	S-111	SOUND	N/A		TX-118	SOUND	04/83	JET
BX-102	ASMD LKR	11/78	AR	S-112	SOUND	N/A		TY-101	ASMD LKR	04/83	JET
BX-103	SOUND	11/83	AR(2)	SX-101	SOUND	N/A		TY-102	SOUND	09/79	AR
BX-104	SOUND	08/89	SN	SX-102	SOUND	N/A		TY-103	ASMD LKR	02/83	JET
BX-106	SOUND	03/81	SN	SX-103	SOUND	N/A		TY-104	ASMD LKR	11/83	AR
BX-108	SOUND	07/85	SN	SX-104	ASMD LKR	04/00	JET (7)	TY-105	ASMD LKR	02/83	JET
BX-107	SOUND	08/90	JET	SX-105	SOUND	N/A		TY-106	ASMD LKR	11/78	AR
BX-108	ASMD LKR	07/79	SN	SX-106	SOUND	05/00	JET (8)	U-101	ASMD LKR	09/79	AR
BX-109	SOUND	08/90	JET	SX-107	ASMD LKR	10/79	AR	U-102	SOUND	N/A	
BX-110	ASMD LKR	08/85	SN	SX-108	ASMD LKR	08/79	AR	U-103	SOUND	09/00	JET (9)
BX-111	ASMD LKR	03/95	JET	SX-109	ASMD LKR	05/81	AR	U-104	ASMD LKR	10/78	AR
BX-112	SOUND	08/90	JET	SX-110	ASMD LKR	08/79	AR	U-105	SOUND	N/A	
BY-101	SOUND	06/84	JET	SX-111	ASMD LKR	07/79	SN	U-106	SOUND	N/A	
BY-102	SOUND	04/95	JET	SX-112	ASMD LKR	07/79	AR	U-107	SOUND	N/A	
BY-103	ASMD LKR	11/87	JET	SX-113	ASMD LKR	11/78	AR	U-108	SOUND	N/A	
BY-104	SOUND	01/85	JET	SX-114	ASMD LKR	07/79	AR	U-109	SOUND	N/A	
BY-106	ASMD LKR	N/A		SX-115	ASMD LKR	09/78	AR	U-110	ASMD LKR	12/84	AR
BY-108	ASMD LKR	N/A		T-101	ASMD LKR	04/93	SN	U-111	SOUND	N/A	
BY-107	ASMD LKR	07/79	JET	T-102	SOUND	03/81	AR(2)(3)	U-112	ASMD LKR	09/79	AR
BY-108	ASMD LKR	02/85	JET	T-103	ASMD LKR	11/83	AR	U-201	SOUND	08/79	AR
BY-109	SOUND	07/87	JET	T-104	SOUND	11/89 (4)	JET	U-202	SOUND	08/79	SN
BY-110	SOUND	01/85	JET	T-105	SOUND	06/87	AR	U-203	SOUND	08/79	AR
BY-111	SOUND	01/85	JET	T-106	ASMD LKR	08/81	AR	U-204	SOUND	08/79	SN
BY-112	SOUND	06/84	JET	T-107	ASMD LKR	05/96	JET				

LEGEND:

AR = Administratively interim stabilized
 JET = Saltwell jet pumped to remove drainable interstitial liquid
 SN = Supernate pumped (Non-Jet pumped)
 N/A = Not yet interim stabilized
 ASMD LKR = Assumed Leaker

Interim Stabilized Tanks 125
 Not Yet Interim Stabilized 24

Total Single-Shell Tanks 149

TABLE G-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS
(sheet 2 of 2)

Footnotes:

- (1) These dates indicate when the tanks were actually interim stabilized. In some cases, the official interim stabilization documents were issued at a later date.
- (2) Although tanks, BX-103, T-102 and T-112 met the interim stabilization administrative procedure at the time they were stabilized, they no longer meet the recently updated administrative procedure. The tanks were re-evaluated in 1996 and memo 9654456, J. H. Wicks to Dr. J. K. McClusky, DOE-RL, dated September 1996, was issued which recommended that no further pumping be performed on these tanks, based on an economic evaluation.

Document RPP-5556, Rev. 0, "Updated Drainable Interstitial Liquid Volume Estimates for 119 Single-Shell Tanks Declared Stabilized," J. G. Field, February 7, 2000, states that five tanks no longer meet the stabilization criteria (BX-103, T-102, and T-112 exceed the supernate criteria, and BY-103 and C-102 exceed the DIL criteria).

An intrusion investigation was completed on tank B-202 in 1996 because of a detected increase in surface level. As a result of this investigation, it was determined that this tank no longer meets the recently updated administrative procedure for 200 series tanks.
- (3) Original Interim Stabilization data are missing on four tanks: B-201, T-102, T-112, and T-201.
- (4) Tank 241-T-104 was Interim Stabilized on November 19, 1999. In-tank video taken October 7, 1999, shows the surface is clearly sludge-type waste with no saltcake present. No visible water on surface. Waste surface appears level across tank with numerous cracks. There is a minimal collapsed area around the saltwell screen, with no visible bottom.
- (5) Tank 241-T-110 was Interim Stabilized on January 5, 2000, due to major equipment failure. An in-tank video taken October 7, 1999 (pumping was discontinued on August 12, 1999), showed the surface of this tank as smooth, brown-tinted sludge with visible cracks.
- (6) Tank 241-S-103 was declared Interim Stabilized April 18, 2000. The surface is a rough, black and brown-colored waste with yellow patches of saltcake visible throughout. The surface appears to be damp but not saturated, and shows irregular cracking typically seen with surfaces beginning to dry out. A pool of supernatant liquid (10 feet in diameter, 5 feet deep, 1.0 Kgallons) is visible from video observations.
- (7) Tank 241-SX-104 was declared Interim Stabilized April 26, 2000, due to major equipment failure. The surface is a rough, yellowish gray saltcake waste with an irregular surface of visible cracks and shelves that were created as the surface dried out. The waste surface appears to be dry and shows no standing water within the tank.
- (8) Tank 241-SX-106 was declared Interim Stabilized May 5, 2000. The surface is a smooth, white-colored saltcake waste. The surface level slopes slightly from the tank sidewall down to a large depression in the center of the tank. A second depression surrounds both saltwell screens and an abandoned LOW. The waste surfaces appear dry and show no standing water within the tank.
- (9) Tank 241-U-103 was declared Interim Stabilized September 11, 2000. The surface is a brown colored waste with irregular patches of white salt crystal. Approximately 30% of the waste surface is covered by the salt formations. The surface level slopes slightly from the tank sidewall down to the first of two depressions in the center of the tank. The waste surface appears dry and shows signs of drying and cracking due to saltwell pumping. LOW readings indicate an average adjusted ILL of 60.2 inches. There is a small pool of supernatant liquid estimated to be 500 gallons.

TABLE G-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES

September 30, 2000

(sheet 1 of 2)

New single-shell tank interim stabilization milestones were negotiated in 1999 and are identified in the "Consent Decree." The Consent Decree was approved on August 16, 1999.

CONSENT DECREE
Attachments A-1 and A-2

Following is the schedule for pumping liquid waste from the remaining twenty-nine (29) single-shell tanks. This schedule is enforceable pursuant to the terms of the Decree except for the "Project Pumping Completion Dates" which are estimates only and not enforceable. (Note: Schedule does not include C-106)

Tank Designation		Pumping Initiated	Projected Pumping Completion Date	Interim Stabilization Date
1.	T-104	Already initiated	May 30, 1999	November 19, 1999
2.	T-110	Already initiated	May 30, 1999	January 5, 2000
3.	SX-104	Already initiated	December 30, 2000	April 26, 2000
4.	SX-106	Already initiated	December 30, 2000	May 5, 2000
5.	S-102	Already initiated	March 30, 2001	
6.	S-106	Already initiated	March 30, 2001	
7.	S-103	Already initiated	March 30, 2001	April 18, 2000
8.	U-103*	September 26, 1999	April 15, 2002	September 11, 2000
9.	U-105*	December 10, 1999	April 15, 2002	
10.	U-102*	January 20, 2000	April 15, 2002	
11.	U-109*	March 11, 2000	April 15, 2002	
12.	A-101	May 6, 2000	September 30, 2003	
13.	AX-101	July 29, 2000	September 30, 2003	
14.	SX-105	August 8, 2000	February 28, 2003	
15.	SX-103	March 15, 2001	February 28, 2003	
16.	SX-101	March 15, 2001	February 28, 2003	
17.	U-106*	August 24, 2000	February 28, 2003	
18.	BY-106	July 15, 2001	June 30, 2003	
19.	BY-105	July 15, 2001	June 30, 2003	
20.	U-108	December 30, 2001	August 30, 2003	
21.	U-107	December 30, 2001	August 30, 2003	
22.	S-111	December 30, 2001	August 30, 2003	
23.	SX-102	December 30, 2001	August 30, 2003	
24.	U-111	November 30, 2002	September 30, 2003	
25.	S-109	September 23, 2000	September 30, 2003	
26.	S-112	November 30, 2002	September 30, 2003	
27.	S-101	November 30, 2002	September 30, 2003	
28.	S-107	November 30, 2002	September 30, 2003	
29.	C-103	No later than December 30, 2000, DOE will determine whether the organic layer and pumpable liquids will be pumped from Tank C-103 together or separately, and will establish a deadline for initiating pumping of this tank. The parties will incorporate the initiation deadline into this schedule as provided in Section VI of the Decree. CHG issued a contract to a subcontractor for scope and cost estimate. RPP-6310, "Removal of Separable Organic from C-103 Scoping Study," was issued in May 2000. Additionally, other alternatives are being studied.		

* Tanks containing organic complexants.

TABLE G-2. SINGLE-SHELL TANK INTERIM STABILIZATION MILESTONES
(sheet 2 of 2)

Completion of Interim Stabilization. DOE will complete interim stabilization of all 29 single-shell tanks listed above by September 30, 2004.

Percentage of Pumpable Liquid Remaining to be Removed.

93% of Total Liquid	9/30/1999
38% of Organic Complexed Pumpable Liquids	9/30/2000
5% of Organic Complexed Pumpable Liquids	9/30/2001
18% of Total Liquid	9/30/2002
2% of Total Liquid	9/30/2003

The "percentage of pumpable liquid remaining to be removed" is calculated by dividing the volume of pumpable liquid remaining to be removed from tanks not yet interim stabilized by the sum of the total amount of liquid that has been pumped and the pumpable liquid that remains to be pumped from all tanks.

TABLE G-3. SINGLE-SHELL TANKS STABILIZATION STATUS SUMMARY

September 30, 2000

Partial Interim Isolated (PI)	Intrusion Prevention Completed (IP)		Interim Stabilized (IS)	
<u>EAST AREA</u>	<u>EAST AREA</u>	<u>WEST AREA</u>	<u>EAST AREA</u>	<u>WEST AREA</u>
A-101	A-103	S-104	A-102	S-103
A-102	A-104	S-105	A-103	S-104
	A-105		A-104	S-105
AX-101	A-106	SX-107	A-105	S-108
		SX-108	A-106	S-110
BY-102	AX-102	SX-109		
BY-103	AX-103	SX-110	AX-102	SX-104
BY-105	AX-104	SX-111	AX-103	SX-106
BY-106		SX-112	AX-104	SX-107
BY-109	B-FARM - 16 tanks	SX-113		SX-108
	BX-FARM - 12 tanks	SX-114	B-FARM - 16 tanks	SX-109
		SX-115	BX-FARM - 12 tanks	SX-110
C-103				SX-111
C-105	BY-101		BY-101	SX-112
C-106	BY-104	T-102	BY-102	SX-113
East Area 11	BY-107	T-103	BY-103	SX-114
	BY-108	T-105	BY-104	SX-115
<u>WEST AREA</u>	BY-110	T-106	BY-107	
S-101	BY-111	T-108	BY-108	T-Farm - 16 tanks
S-102	BY-112	T-109	BY-109	TX-FARM - 18 tanks
S-103		T-112	BY-110	TY-FARM - 6 tanks
S-106	C-101	T-201	BY-111	
S-107	C-102	T-202	BY-112	U-101
S-108	C-104	T-203		U-103
S-109	C-107	T-204	C-101	U-104
S-110	C-108		C-102	U-110
S-111	C-109	TX-FARM - 18 tanks	C-104	U-112
S-112	C-110	TY-FARM - 6 tanks	C-105	U-201
	C-111		C-107	U-202
SX-101	C-112	U-101	C-108	U-203
SX-102	C-201	U-104	C-109	U-204
SX-103	C-202	U-112	C-110	West Area 65
SX-104	C-203	U-102	C-111	Total 125
SX-105	C-204	U-202	C-112	
SX-106	East Area 55	U-203	C-201	
		U-204	C-202	
T-101		West Area 53	C-203	
T-104		Total 108	C-204	
T-107			East Area 60	
T-110				
T-111				
U-102	Controlled, Clean, and Stable (CCS)			
U-103				
U-105	<u>EAST AREA</u>	<u>WEST AREA</u>		
U-106	BX-FARM - 12 Tanks	TX-FARM - 18 tanks		
U-107		TY FARM - 6 tanks		
U-108	East Area 12	West Area 24		
U-109		Total 36		
U-110				
U-111				
West Area 29	Note: CCS activities have been deferred until funding is available.			
Total 40				

APPENDIX H
TANKS AND EQUIPMENT CODE AND
STATUS DEFINITIONS

TABLE H - 1. TANK AND EQUIPMENT CODE/STATUS DEFINITIONS

September 30, 2000

1. TANK STATUS CODES

WASTE TYPE (also see definitions, section 3 below)

AW	Aging Waste (Neutralized Current Acid Waste [NCAW])
CC	Complexant Concentrate Waste
CP	Concentrated Phosphate Waste
DC	Dilute Complexed Waste
DN	Dilute Non-Complexed Waste
DSS	Double-Shell Slurry
DSSF	Double-Shell Slurry Feed
NCPLX	Non-Complexed Waste
PD	Plutonium-Uranium Extraction (PUREX) Neutralized Cladding Removal Waste (NCRW), transuranic waste (TRU)

TANK USE (DOUBLE-SHELL TANKS ONLY)

CWHT	Concentrated Waste Holding Tank
DRCVR	Dilute Receiver Tank
EVFD	Evaporate Feed Tank
SRCVR	Slurry Receiver Tank

2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

F	Food Instrument Company (FIC) Automatic Surface Level Gauge
E	ENRAF Surface Level Gauge (being installed to replace FICs)
M	Manual Tape Surface Level Gauge
P	Photo Evaluation
S	Sludge Level Measurement Device

3. DEFINITIONS

WASTE TANKS - GENERAL

Waste Tank Safety Issue

A potentially unsafe condition in the handling of waste material in underground storage tanks that requires corrective action to reduce or eliminate the unsafe condition.

Watch List Tank

An underground storage tank containing waste that requires special safety precautions because it may have a serious potential for release of high level radioactive waste because of uncontrolled increases in temperature or pressure. Special restrictions have been placed on these tanks by "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510, (also known as the Wyden Amendment).

Characterization

Characterization is understanding the Hanford tank waste chemical, physical, and radiological properties to the extent necessary to insure safe storage and interim operation, and ultimate disposition of the waste.

WASTE TYPES

Aging Waste (AW)

High level, first cycle solvent extraction waste from the PUREX plant (NCAW)

Concentrated Complexant (CC)

Concentrated product from the evaporation of dilute complexed waste.

Concentrated Phosphate Waste (CP)

Waste originating from the decontamination of the N Reactor in the 100 N Area. Concentration of this waste produces concentrated phosphate waste.

Dilute Complexed Waste (DC)

Characterized by a high content of organic carbon including organic complexants: ethylenediaminetetraacetic acid (EDTA), citric acid, and hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory (from SSTs).

Dilute Non-Complexed Waste (DN)

Low activity liquid waste originating from T and S Plants, the 300 and 400 Areas, PUREX facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and PFP (supernate).

Double-Shell Slurry (DSS)

Waste that exceeds the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. For reporting purposes, DSS is considered a solid.

Double-Shell Slurry Feed (DSSF)

Waste concentrated just before reaching the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. This form is not as concentrated as DSS.

Non-complexed (NCPLX)

General waste term applied to all Hanford Site (NCPLX) liquors not identified as complexed.

PUREX Decladding (PD)

PUREX Neutralized Cladding Removal Waste (NCRW) is the solids portion of the PUREX plant neutralized cladding removal waste stream; received in Tank Farms as a slurry. NCRW solids are classified as transuranic (TRU) waste.

Drainable Interstitial Liquid (DIL)

Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity. (See also Section 4 below)

Supernate

The liquid above the solids or in large liquid pools covered by floating solids in waste storage tanks. (See also Section 4 below)

Ferrocyanide

A compound of iron and cyanide commonly expressed as FeCN . The actual formula for the ferrocyanide anion is $[\text{Fe}(\text{CN})_6]^{4-}$.

INTERIM STABILIZATION (Single-Shell Tanks only)

Interim Stabilized (IS)

A tank which contains less than 50 Kgallons of drainable interstitial liquid and less than 5 Kgallons of supernatant liquid. If the tank was jet pumped to achieve interim stabilization, then the jet pump flow or saltwell screen inflow must also have been at or below 0.05 gpm before interim stabilization criteria is met.

Jet Pump

The jet pump system includes 1) a jet assembly with foot valve mounted to the base of two pipes that extend from the top of the well to near the bottom of the well casing inside the saltwell screen, 2) a centrifugal pump to supply power fluid to the down-hole jet assembly, 3) flexible or rigid transfer jumpers, 4) a flush line, and 5) a flowmeter. The jumpers contain piping, valves, and pressure and limit switches.

The centrifugal pump and jet assembly are needed to pump the interstitial liquid from the saltwell screen into the pump pit, nominally a 40-foot elevation rise. The power fluid passes through a nozzle in the jet assembly and acts to convert fluid pressure head to velocity head, thereby reducing the pressure in the jet assembly chamber. The reduction in pressure allows the interstitial liquid to enter the jet assembly chamber and mix with the power fluid. Velocity head is converted to pressure head above the nozzle, lifting power fluid, and interstitial liquid to the pump pit. Pumping rates vary from 0.05 gallons to about 4 gpm.

Saltwell Screen

The saltwell system is a 10-inch diameter saltwell casing consisting of a stainless steel saltwell screen welded to a Schedule 40 carbon steel pipe. The casing and screen are to be inserted into the 12-inch tank riser located in the pump pit. The stainless steel screen portion of the system will extend through the tank waste to near the bottom of the tank. The saltwell screen portion of the casing is an approximately 10-foot length of 300 Series, 10-inch diameter, stainless steel pipe with screen openings (slots) of 0.05 inches.

Emergency Pumping Trailer

A 45-foot tractor-type trailer is equipped to provide storage space and service facilities for emergency pumping equipment: this consists of two dedicated jet pump jumpers and two jet pumps, piping and dip tubes for each, two submersible pumps and attached piping, and a skid-mounted Weight Factor Instrument Enclosure (WFIE) with an air compressor and electronic recording instruments. The skid also contains a power control station for the pumps, pump pit leak detection, and instrumentation. A rack for over 100 feet of overground double-contained piping is also in the trailer.

INTRUSION PREVENTION (ISOLATION) Single-Shell Tanks only

Partially Interim Isolated (PI)

The administrative designation reflecting the completion of the physical effort required for Interim Isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization.

Interim Isolated (II)

The administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. In June 1993, Interim Isolation was replaced by Intrusion Prevention.

Intrusion Prevention (IP)

Intrusion Prevention is the administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank,

or diversion box. Under no circumstances are electrical or instrumentation devices disconnected or disabled during the intrusion prevention process (with the exception of the electrical pump).

Controlled, Clean, and Stable (CCS)

Controlled, Clean, and Stable reflects the completion of several objectives: "Controlled" - provide remote monitoring for required instrumentation and implement controls required in the TWRS Authorization Basis; "Clean" - remove surface soil contamination and downpost the Tank Farms to RBA/URMA/RA radiological control status, remove abandoned equipment, and place reusable equipment in compliant storage; and "Stable" - remove pumpable liquids from the SSTs and IMUSTs and isolate the tanks.

TANK INTEGRITY

Sound

The integrity classification of a waste storage tank for which surveillance data indicate no loss of liquid attributed to a breach of integrity.

Assumed Leaker

The integrity classification of a waste storage tank for which surveillance data indicate a loss of liquid attributed to a breach of integrity.

Assumed Re-Leaker

A condition that exists after a tank has been declared as an "assumed leaker" and then the surveillance data indicates a new loss of liquid attributed to a breach of integrity.

TANK INVESTIGATION

Intrusion

A term used to describe the infiltration of liquid into a waste tank.

SURVEILLANCE INSTRUMENTATION

Drywells

Drywells are vertical boreholes with 6-inch (internal diameter) carbon steel casings positioned radially around SSTs. These wells range between 50 and 250 feet in depth, and are monitored between the range of 50 to 150 feet. The wells are sealed when not in use. They are called drywells because they do not penetrate to the water table and are therefore usually "dry." There are 759 drywells.

Monitoring is done by gamma radiation or neutron-moisture sensors to obtain scan profiles of radiation or moisture in the soil as a function of well depth, which could be indicative of tank leakage.

All drywell scans are by request only, and only under "extreme" conditions. The contractor no longer has vans to perform the scans; any future scans would be subcontracted.

Laterals

Laterals are horizontal drywells positioned under single-shell waste storage tanks to detect radionuclides in the soil which could be indicative of tank leakage. These drywells can be monitored by radiation detection probes. Laterals are 4-inch inside diameter steel pipes located 8 to 10 feet below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms. There are currently no functioning laterals and no plan to prepare them for use.

Surface Levels

The surface level measurements in all waste storage tanks are monitored by manual or automatic conductivity probes, and recorded and transmitted or entered into the Surveillance Analysis Computer System (SACS).

Automatic FIC

An automatic waste surface level measurement device is manufactured by the Food Instrument Company (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. The controller can provide a digital display of the data and until February 1999, the majority of the FICs transmitted readings to the CASS. Since CASS retirement, all FIC gauges are read manually. FICs are being replaced by ENRAF detectors (see below).

ENRAF 854 ATG Level Detector

FICs and some manual tapes are in the process of being replaced by the ENRAF ATG 854 level detector. The ENRAF gauge, fabricated by ENRAF Incorporated, determines waste level by detecting variations in the weight of a displacer suspended in the tank waste. The displacer is connected to a wire wound onto a precision measuring drum. A level causes a change in the weight of the displacer which will be detected by the force transducer. Electronics within the gauge causes the servo motor to adjust the position of the displacer and compute the tank level based on the new position of the displacer drum. The gauge displays the level in decimal inches. The first few ENRAFs that received remote reading capability transmit liquid level data via analog output to the Tank Monitor and Control System (TMACS). The remaining ENRAFs and future installations will transmit digital level data to TMACS via an ENRAF Computer Interface Unit (CIU). The CIU allows fully remote communication with the gauge, minimizing tank farm entry.

Annulus

The annulus is the space between the inner and outer shells on DSTs only. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.

Liquid Observation Well (LOW)

In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are usually constructed of fiberglass or TEFZEL-reinforced epoxy-polyester resin (TEFZEL, a trademark of E. I. du Pont de Nemours & Company). There are a few LOWs constructed of steel. LOWs are sized to extend to within 1 inch of the bottom of the waste tank, are sealed at their bottom ends and have a nominal outside diameter of 3.5 inches. Two probes are used to monitor changes in the ILL; gamma and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 65 LOWs (64 are in operation) installed in SSTs that contain or are capable of containing greater than 50 Kgallons of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs, (SY-102 and AW-103 tanks), are used for special, rather than routine, surveillance purposes only.

Thermocouple (TC)

A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple on a device (probe) is called a thermocouple tree. In DSTs there may be one or more thermocouple trees in risers in the primary tank. In addition, in DSTs only, there are thermocouple elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete.

These monitor temperature gradients within the concrete walls, bottom of the tank, and the domes. In SSTs, one or more thermocouples may be installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple (probe) may be installed in a riser, or lowered down an existing

riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.

In-tank Photographs and Videos

In-tank photographs and videos may be taken to aid in resolving in-tank measurement anomalies and determine tank integrity. Photographs and videos help determine sludge and liquid levels by visual examination.

TERMS/ACRONYMS

CCS Controlled, Clean and Stable (tank farms)

FSAR Final Safety Analysis Report (replaces BIOS, effective October 18, 1999)

II Interim Isolated

IP Intrusion Prevention Completed

IS Interim Stabilized

MT/FIC/ENRAF Manual Tape, Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)

OSD Operating Specifications Document

PI Partial Interim Isolated

SAR Safety Analysis Reports

SHMS Standard Hydrogen Monitoring System

TMACS Tank Monitor and Control System

TPA Hanford Federal Facility Consent and Compliance Order, "Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment, 1994 (Tri-Party Agreement)

USQ Unreviewed Safety Question

Wyden Amendment "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the National Defense Authorization Act for Fiscal Year 1991, November 5, 1990, Public Law 101-510.

4. INVENTORY AND STATUS BY TANK - COLUMN VOLUME CALCULATIONS AND DEFINITIONS FOR TABLE A-6 (SINGLE-SHELL TANKS)

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Total Waste	<u>Solids volume plus Supernatant liquid.</u> Solids include sludge and saltcake (see definitions below).

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Supernate (1)	<u>May be either measured or estimated.</u> Supernate is either the estimated or measured liquid floating on the surface of the waste or under a floating solids crust. In-tank photographs or videos are useful in estimating the liquid volumes; liquid floating on solids and core sample data are useful in estimating large liquid pools under a floating crust.
Drainable Interstitial Liquid (DIL) (1)	<u>This is initially calculated.</u> Drainable interstitial liquid is calculated based on the saltcake and sludge volumes, using calculated porosity values from past pumping or actual data for each tank. Interstitial liquid is liquid that fills the interstitial spaces of the solids waste. The sum of the interstitial liquid contained in saltcake and sludge minus an adjustment for capillary height is the initial volume of drainable interstitial liquid.
Pumped This Month	<u>Net total gallons of liquid pumped from the tank during the month.</u> If supernate is present, pump production is first subtracted from the supernatant volume. The remainder is then subtracted from the drainable interstitial liquid volume.
Total Pumped (1)	<u>Cumulative net total gallons of liquid pumped from 1979 to date.</u>
Drainable Liquid Remaining (DLR) (1)	<u>Supernate plus Drainable Interstitial Liquid.</u> The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernate.
Pumpable Liquid Remaining (PLR) (1)	<u>Drainable Liquid Remaining minus unpumpable volume.</u> Not all drainable interstitial liquid is pumpable.
Sludge	<u>Solids formed during sodium hydroxide additions to waste.</u> Sludge usually was in the form of suspended solids when the waste was originally received in the tank from the waste generator. In-tank photographs or videos may be used to estimate the volume.
Saltcake	<u>Results from crystallization and precipitation after concentration of liquid waste, usually in an evaporator.</u> If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs or videos may be used to estimate the saltcake volume.
Solids Volume Update	<u>Indicates the latest update of any change in the solids volume.</u>
Solids Update Source - See Footnote	<u>Indicates the source or basis of the latest solids volume update.</u>
Last In-tank Photo	<u>Date of last in-tank photographs taken.</u>
Last In-tank Video	<u>Date of last in-tank video taken.</u>
See Footnotes for These Changes	<u>Indicates any change made the previous month.</u> A footnote explanation for the change follows the Inventory and Status by Tank Appendix (Table E-6).

- (1) As pumping continues, supernate, DIL, DLR, PLR, and total gallons pumped are adjusted accordingly based on actual pump volumes.

APPENDIX I
TANK FARM CONFIGURATION, STATUS
AND FACILITY CHARTS

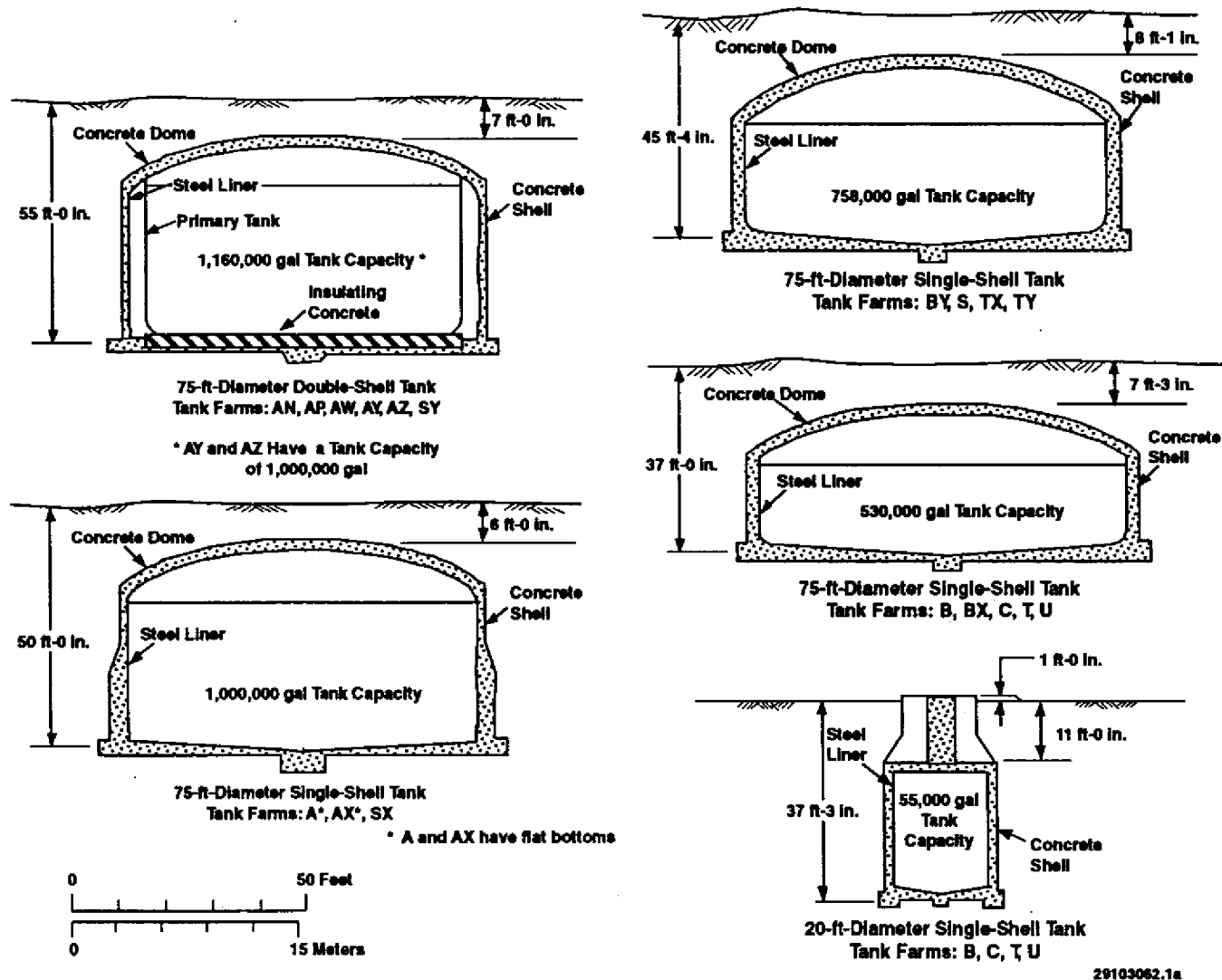
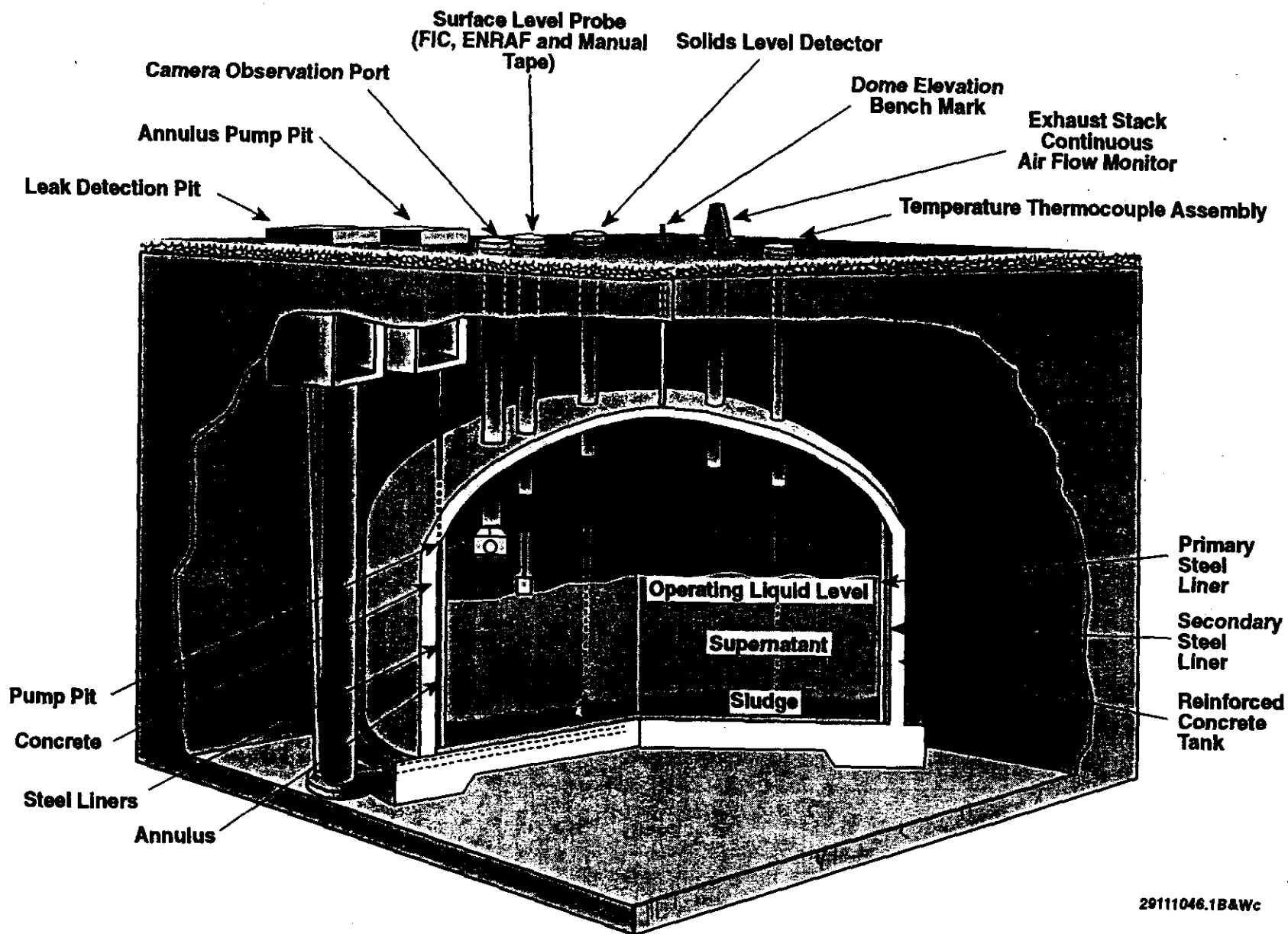
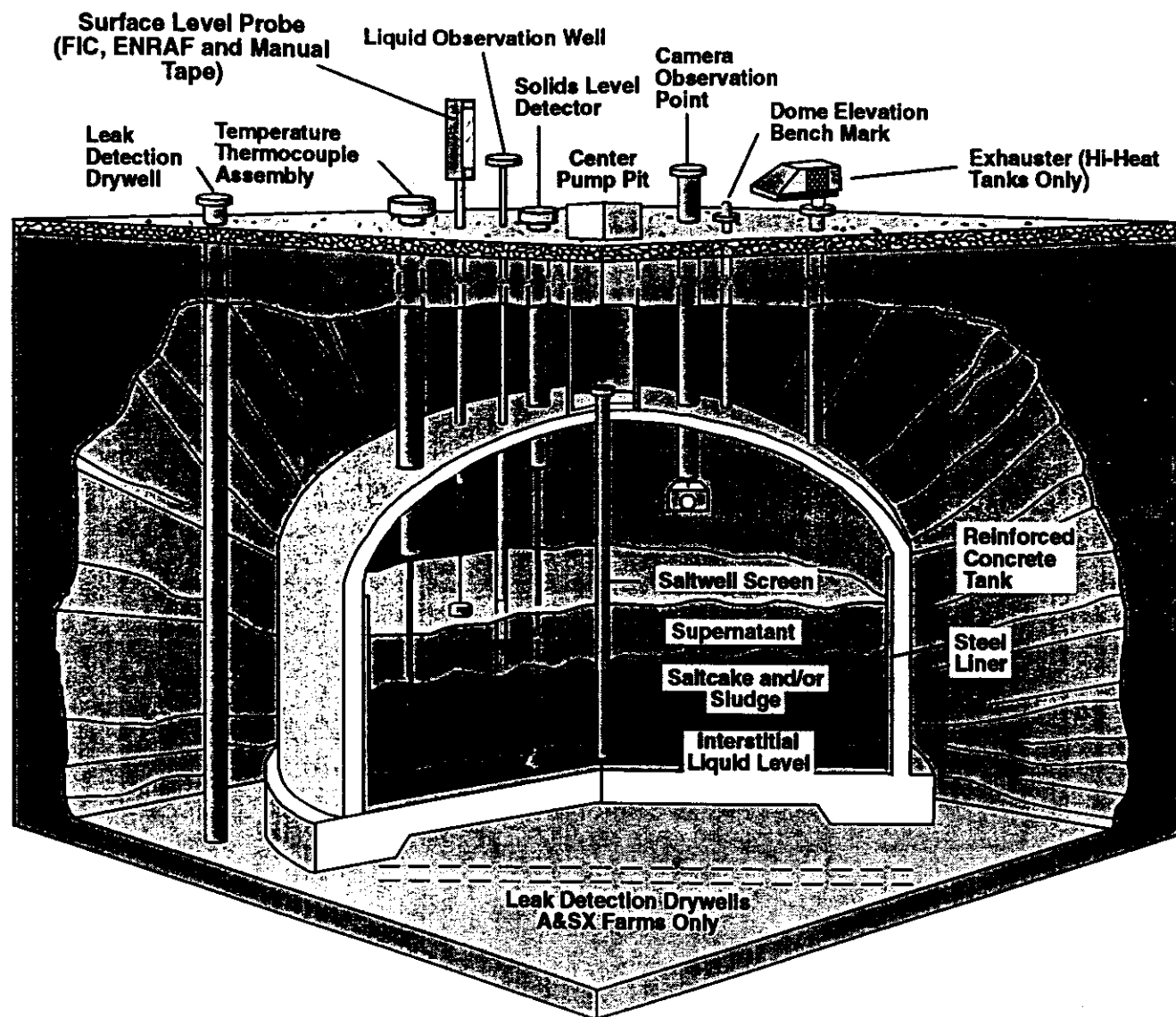


FIGURE I-1. HIGH-LEVEL WASTE TANK CONFIGURATION



29111046.1B&Wc

FIGURE I-2. DOUBLE-SHELL TANK INSTRUMENTATION CONFIGURATION



29111046.2B&Wb

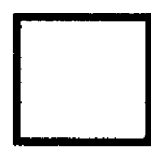
FIGURE I-3. SINGLE-SHELL TANK INSTRUMENTATION CONFIGURATION

Hanford Tank Farm Facilities 200 East

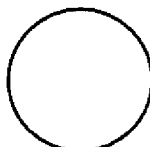
Note:
All single-shell tanks were removed from service (not allowed to receive waste) on or before November 21, 1980

Active Lines Only

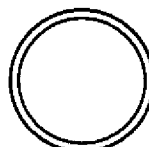
- Concrete encased or pipe-in-pipe
- - - - - Direct Buried Pipe
- Cross-Site Transfer Lines (concrete encased or pipe-in-pipe)



Controlled, Clean and Stable



Single-Shell Sound Tanks



Double-Shell

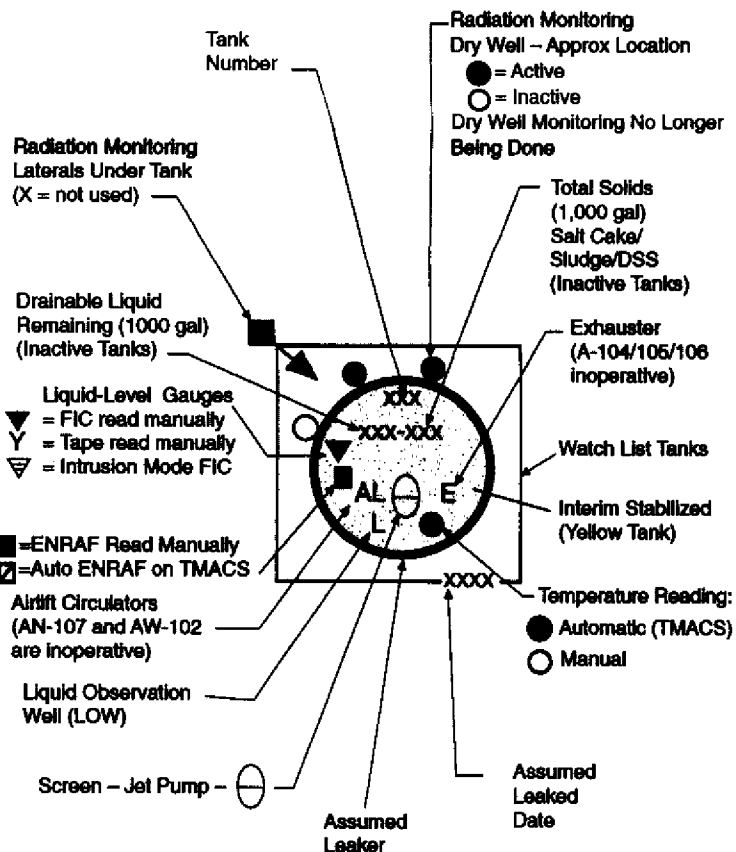


Intrusion Prevention Completed

All tanks 75 ft. dia. except 200 series tanks which are 20 ft. dia. @ 55,000 gal

DST = Double-Shell Tank
SST = Single-Shell Tank
DCRT = Double Contained Receiver Tank
ENRAF/FIC/MT = Liquid Level Monitoring Devices
TMACS = Tank Monitor and Control System

High Heat Load Tanks = East Area C-108



Watch List Tanks

■ H₂/Flammable gases

Status as of September 30, 2000
Updated Quarterly
Issued by River Protection Project

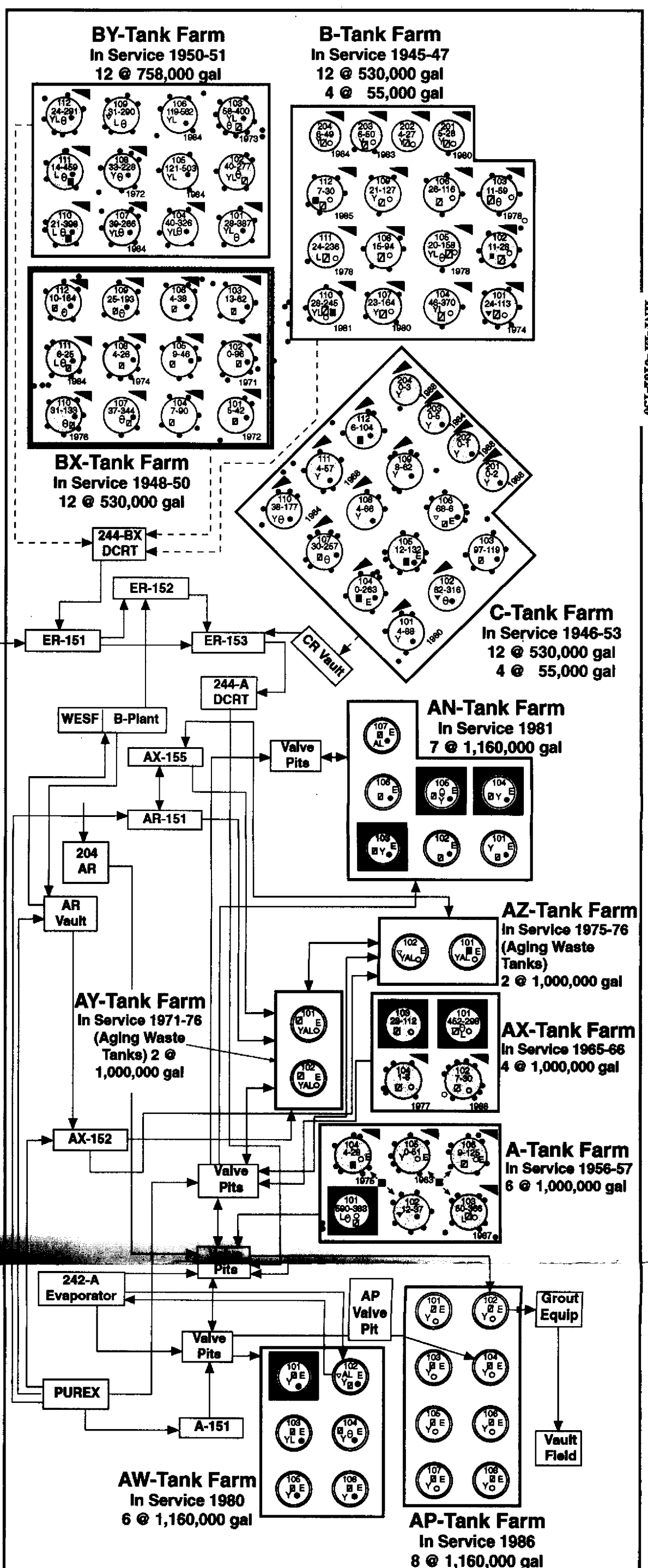


Figure I-4
(Schematic)

29502008.2C
09/30/00

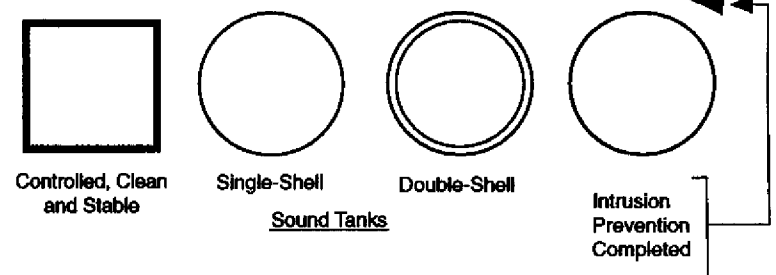
Hanford Tank Farm Facilities 200 West

Note:

All single-shell tanks were removed from service (not allowed to receive waste) on or before November 21, 1980

Active Lines Only

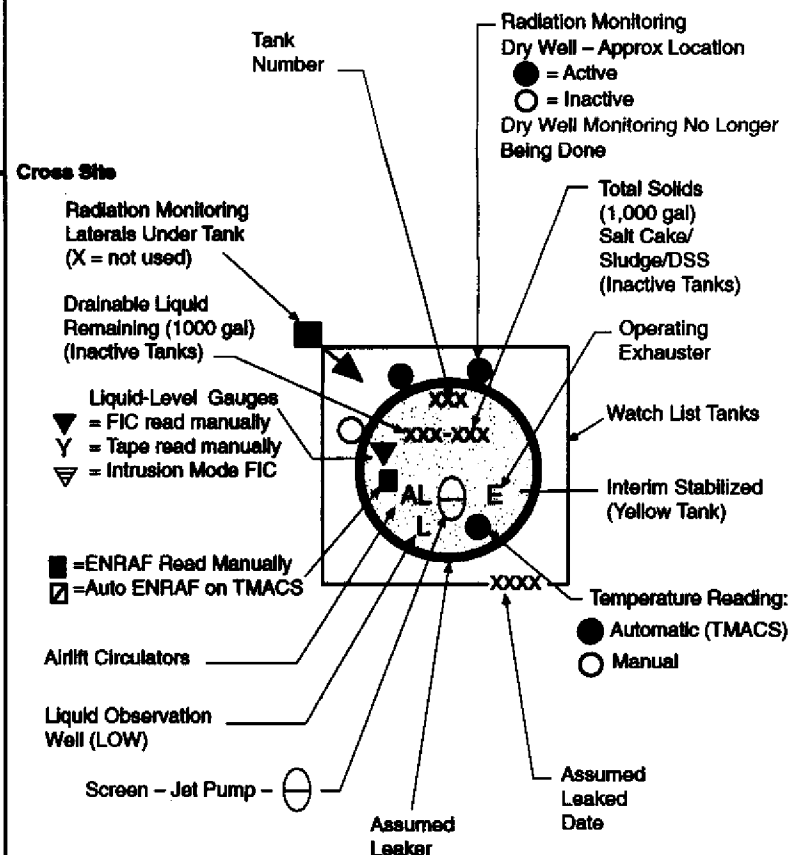
- Concrete encased or pipe-in-pipe
- - - - - Direct Buried Pipe
- Cross-Site Transfer Lines (concrete encased or pipe-in-pipe)



All tanks 75 ft. dia. except 200 series tanks which are 20 ft. dia. @ 55,000 gal

DST = Double-Shell Tank
SST = Single-Shell Tank
DCRT = Double Contained Receiver Tank
ENRAF/FIC/MT = Liquid Level Monitoring Devices
TMACS = Tank Monitor and Control System

High Heat Load Tanks = West Area - SX-107/108/109/110/111/112/114



Watch List Tanks

H2/Flammable gases (109-SX has potential only-other tanks vent through it)

Status as of September 30, 2000
Updated Quarterly
Issued by River Protection Project

29502008.1C
09/30/00

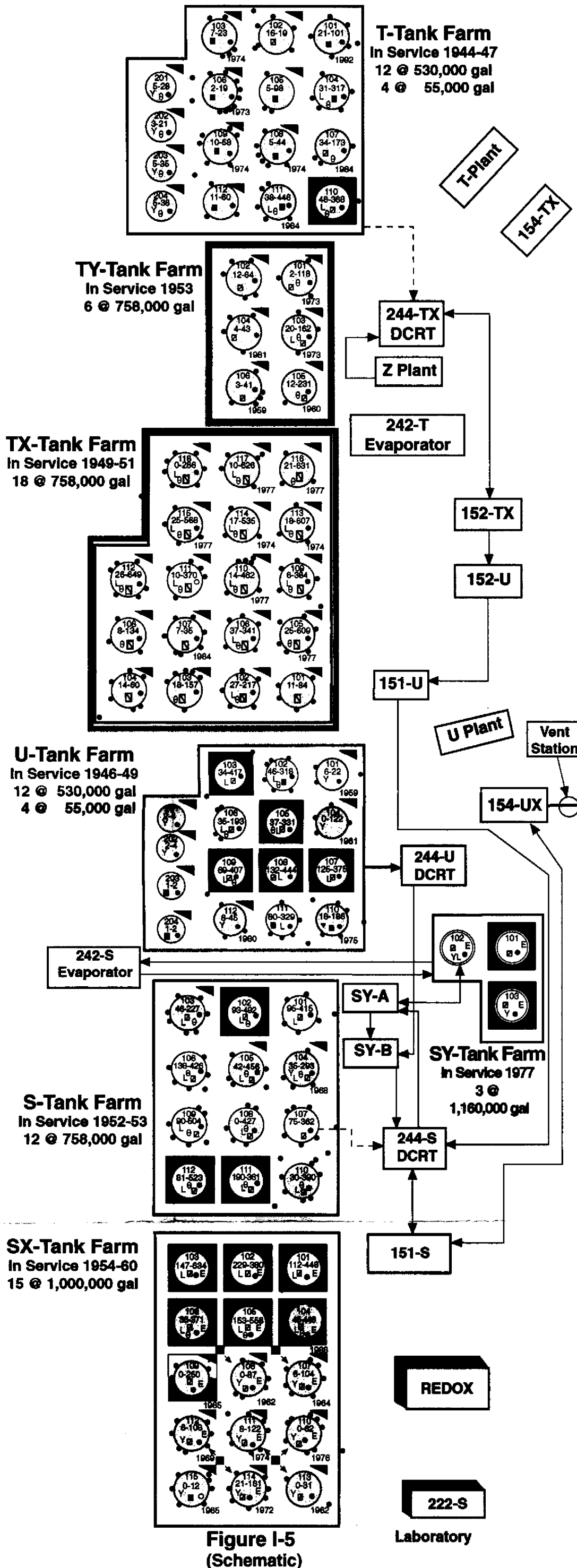


Figure I-5
(Schematic)

DISTRIBUTION

Number of copies

OFFSITE - USA

2

Congress of the United States

U. S. Senate
717 Hart Senate Building
Washington D.C. 20510

Senator Ron Wyden

U. S. House of Representatives
1323 Longworth House Office Building
Washington D. C. 20515

Congressman Richard "Doc" Hastings, 4th District
Atten: Jeff Markey

4

U. S. Department of Energy-Headquarters

1000 Independence Avenue, SW
Washington, D. C. 20585

H. Calley
William M. Levitan

EM-38 Cloverleaf Bldg.
EM-1 FORS/5A-014

U. S. Department of Energy-Headquarters

19901 Germantown Rd
Germantown, MD 20874

Kurt Juroff
Ralph Lightner

EM-44
EM-44

1

U. S. Nuclear Regulatory Commission

Division of Fuel Cycle, Safeguards & Security
Mail Stop T8-A33
Washington, DC 20555

Robert Pierson, Chief FSPB/FCSS (ADDRESSEE ONLY)

2

Washington State Department of Ecology

Nuclear & Mixed Waste Management Program
P.O. Box 47600
Olympia, WA 98504-7600

Library

Washington State Department of Ecology

Nuclear Waste Program
300 Desmond Drive
Lacey, WA 98504

R. Stanley

1	<u>General Accounting Office</u>	
	C. R. Abraham	A1-80
2	<u>Washington State Department of Ecology</u>	
	K. E. DeWitt	B5-18
	Library	B5-18
1	<u>U. S. Environmental Protection Agency</u>	
	D. R. Sherwood	B5-01
22	<u>U. S. Department of Energy</u>	
	W. Abdul	H6-60
	H. L. Boston	H6-60
	D. C. Bryson	H6-60
	J. M. Clark	H6-60
	J. J. Davis	H6-60
	B. A. Harkins	H6-60
	R. G. Harwood	H6-60
	R. D. Hildebrand	A5-13
	D. H. Irby	H6-60
	G. M. Neath	H6-60
	Wen-Shou Liou	H6-60
	J. Polehn	A4-70
	C. Pacheco	H6-60
	S. H. Pfaff	H6-60
	M. L. Ramsay	H6-60
	M. J. Royack	H6-60
	J. S. Shuen	H6-60
	A. B. Sidpara	H6-60
	H. J. Stafford, Jr.	H6-60
	D. J. Williams	H6-60
	D. D. Wodrich	H6-60
	Reading Room	H2-53
5	<u>Pacific National Northwest Laboratories</u>	
	J. A. Dirks	K8-17
	R. E. Gephart	K9-76
	D. G. Horton	K6-81
	J. L. Huckaby	K7-15
	B. E. Opitz	K6-75
118	<u>CH2M Hill (CHG), and Affiliated Companies</u>	
	D. I. Allen	S5-07
	J. J. Badden	T4-08
	D. G. Baide	R3-72
	H. L. Baune	R2-12
	L. Bedford	R2-84
	T. M. Blaak	S5-13
	V. C. Boyles	R2-11
	D. M. Brooks	H4-20
	K. B. Bryan	R2-58
	D. W. Burbank	H4-02
	J. W. Cammann	T4-08
	K. G. Carothers	R2-11

HNF-EP-0182-150

P. P. Sederburg	R2-50
M. L. Sheriff	S5-03
W. J. Stokes	T4-08
J. N. Strode	R2-11
D. D. Taylor	H6-64
R. R. Thompson	T4-08
D. T. Vladimiroff	S7-20
J. A. Voogd	H6-19
A. E. Young (10)	R1-10
Central Files	B1-07
200 West Shift Office	T4-00
200 East Shift Office	S5-04
Environmental	
Data Mgmt Center (2)	H6-08
Unified Dose Assessment	
Center (UDAC)	A0-20
Document Processing Center	A3-94

OFFSITE - USA

Oregon State Department of Energy
625 Marion St. NE, Suite 1
Salem, OR 97301

Oak Ridge National Laboratory
P. O. Box 2008
Oak Ridge, TN 37831-6180

1 Donald T. Oakley
9612 Hall Road
Potomac, MD 20854

TRI-CITIES:

ARES Corporation
636 Jadwin Ave., Suite B
Richland, WA 99352

Babad Technical Services
2540 Cordoba Court
Richland, WA 99352

1 **Wastren Inc.**
 1050 Gilmore Ave, Suite C
 Richland, WA 99352

ONSITE

1 **BAT**
R. T. Winward H6-60

1 **MACTEC - ERS**
J. F. Bertsch B1-42

1	<u>General Accounting Office</u>	
	C. R. Abraham	A1-80
2	<u>Washington State Department of Ecology</u>	
	K. E. DeWitt	B5-18
	Library	B5-18
1	<u>U. S. Environmental Protection Agency</u>	
	D. R. Sherwood	B5-01
22	<u>U. S. Department of Energy</u>	
	W. Abdul	H6-60
	H. L. Boston	H6-60
	D. C. Bryson	H6-60
	J. M. Clark	H6-60
	J. J. Davis	H6-60
	B. A. Harkins	H6-60
	R. G. Harwood	H6-60
	R. D. Hildebrand	A5-13
	D. H. Irby	H6-60
	G. M. Neath	H6-60
	Wen-Shou Liou	H6-60
	J. Polehn	A4-70
	C. Pacheco	H6-60
	S. H. Pfaff	H6-60
	M. L. Ramsay	H6-60
	M. J. Royack	H6-60
	J. S. Shuen	H6-60
	A. B. Sidpara	H6-60
	H. J. Stafford, Jr.	H6-60
	D. J. Williams	H6-60
	D. D. Wodrich	H6-60
	Reading Room	H2-53
5	<u>Pacific National Northwest Laboratories</u>	
	J. A. Dirks	K8-17
	R. E. Gephart	K9-76
	D.G. Horton	K6-81
	J. L. Huckaby	K7-15
	B. E. Opitz	K6-75
118	<u>CH2M Hill (CHG), and Affiliated Companies</u>	
	D. I. Allen	S5-07
	J. J. Badden	T4-08
	D. G. Baide	R3-72
	H. L. Baune	R2-12
	L. Bedford	R2-84
	T. M. Blaak	S5-13
	V. C. Boyles	R2-11
	D. M. Brooks	H4-20
	K. B. Bryan	R2-58
	D. W. Burbank	H4-02
	J. W. Cammann	T4-08
	K. G. Carothers	R2-11

R. J. Cash	R1-44
C. Defigh-Price	T4-08
D. K. DeFord	S7-24
B. T. Dehn	R2-50
M. P. Delozier	H6-08
M. L. Dexter (12)	R1-51
W. T. Dixon	R1-51
R. A. Dodd	S5-07
A. C. Etheridge	H6-04
S. D. Estey	R2-11
J. G. Field	R2-12
B. A. Flores	S8-09
L. A. Fort	R2-12
K. D. Fowler	R2-11
G. T. Frater	T4-08
J. R. Freeman-Pollard	R1-52
J. S. Garfield	R3-73
K. A. Gasper	H4-02
B. C. Gooding	T4-01
R. D. Gustavson	R3-83
B. M. Hanlon (10)	R3-72
D.C. Hedengren	R2-11
B. A. Higley	R3-73
K. M. Hodgson	R2-11
T. M. Hohl	R3-73
P. R. Hopkins	R2-58
J. W. Hunt	R2-12
S. E. Hulsey	S7-86
O. M. Jaka	S7-24
L. E. Janin	H3-27
B. A. Johnson	S7-02
J. D. Johnson	H4-20
T. E. Jones	HO-22
J. Kalia	R1-43
M. R. Kembel	S7-03
R. A. Kirkbride	R3-73
P. F. Kison	T4-07
N. W. Kirch	R2-11
J. S. Konyu	R3-27
J. G. Kristofzski	R2-50
C.E. Leach	R1-44
J. A. Lechelt	R2-11
G. T. MacLean	G3-10
J. M. Morris	R2-84
P. Ohl	H4-02
A. M. Parker	H6-63
D. L. Parker	R3-75
M. A. Payne	H6-63
R. E. Pohto	R2-84
J. G. Propson	R1-43
R. E. Raymond (2)	T4-08
D. S. Rewinkel	S4-45
J. J. Rice	R2-53
B. E. Ross	S7-83
K. Sathyanarayana	L6-35
R. D. Schreiber	B2-05
E. B. Schwenk, Jr.	H3-28
N. J. Scott-Proctor	S5-01